

GenCore version 4.5  
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OM protein - protein search, using sw model

Run on: September 24, 2001, 16:13:04 : Search time 42.63 Seconds  
(without alignments)  
63.994 Million cell updates/sec

Title: US-09-579-420-1

Perfect score: 264

Sequence: 1 PGPSESRKHLFVDDPQTC.....NTDSNCKARQLELNERTCRC 45

Scoring table:

BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 412676 seqs, 60623988 residues

Total number of hits satisfying chosen parameters: 412676

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Listing first 45 summaries

Database :

A.Geneseq\_0601:\*

- 1: /SIDS8/gcgdata/geneseq/geneseq/AA1980.DAT:\*
- 2: /SIDS8/gcgdata/geneseq/geneseq/AA1981.DAT:\*
- 3: /SIDS8/gcgdata/geneseq/geneseq/AA1982.DAT:\*
- 4: /SIDS8/gcgdata/geneseq/geneseq/AA1983.DAT:\*
- 5: /SIDS8/gcgdata/geneseq/geneseq/AA1984.DAT:\*
- 6: /SIDS8/gcgdata/geneseq/geneseq/AA1985.DAT:\*
- 7: /SIDS8/gcgdata/geneseq/geneseq/AA1986.DAT:\*
- 8: /SIDS8/gcgdata/geneseq/geneseq/AA1987.DAT:\*
- 9: /SIDS8/gcgdata/geneseq/geneseq/AA1988.DAT:\*
- 10: /SIDS8/gcgdata/geneseq/geneseq/AA1989.DAT:\*
- 11: /SIDS8/gcgdata/geneseq/geneseq/AA1990.DAT:\*
- 12: /SIDS8/gcgdata/geneseq/geneseq/AA1991.DAT:\*
- 13: /SIDS8/gcgdata/geneseq/geneseq/AA1992.DAT:\*
- 14: /SIDS8/gcgdata/geneseq/geneseq/AA1993.DAT:\*
- 15: /SIDS8/gcgdata/geneseq/geneseq/AA1994.DAT:\*
- 16: /SIDS8/gcgdata/geneseq/geneseq/AA1995.DAT:\*
- 17: /SIDS8/gcgdata/geneseq/geneseq/AA1996.DAT:\*
- 18: /SIDS8/gcgdata/geneseq/geneseq/AA1997.DAT:\*
- 19: /SIDS8/gcgdata/geneseq/geneseq/AA1998.DAT:\*
- 20: /SIDS8/gcgdata/geneseq/geneseq/AA1999.DAT:\*
- 21: /SIDS8/gcgdata/geneseq/geneseq/AA2000.DAT:\*
- 22: /SIDS8/gcgdata/geneseq/geneseq/AA2001.DAT:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	264	100.0	45	AAV22023	VEGF antagonist pe
2	264	100.0	164	AAK10911	Bovine vascular en
3	264	100.0	164	AAK38920	Human VEGF-165. H
4	264	100.0	165	AAK38921	Human VEGF-165. H
5	264	100.0	165	AAW31085	Vascular endotheli
6	264	100.0	165	AAW31086	Vascular endotheli
7	264	100.0	165	AAW31087	Vascular endotheli
8	264	100.0	165	AAW31088	Vascular endotheli
9	264	100.0	165	AAW31089	Vascular endotheli
10	264	100.0	165	AAW31090	Vascular endotheli
11	264	100.0	165	AAW31091	Vascular endotheli

12	264	100.0	165	AAW31092	Vascular endotheli
13	264	100.0	165	AAW31093	Vascular endotheli
14	264	100.0	165	AAW31094	Vascular endotheli
15	264	100.0	165	AAW31095	Vascular endotheli
16	264	100.0	165	AAW31096	Vascular endotheli
17	264	100.0	189	AAV08281	Human growth facto
18	264	100.0	189	AAV92005	Human vascular en
19	264	100.0	190	AAV92005	Bovine vascular en
20	264	100.0	190	AAV92005	Human vascular en
21	264	100.0	191	AAV33440	Parapox virus VEGF
22	264	100.0	191	AAV33440	Human vascular end
23	264	100.0	191	AAV33440	Human vascular end
24	264	100.0	191	AAV33440	Vascular endotheli
25	264	100.0	191	AAV33440	VEGF165. Homo sap
26	264	100.0	191	AAV33440	Vascular endotheli
27	264	100.0	191	AAV33440	Human VEGF protein
28	264	100.0	191	AAV33440	Amino acid sequenc
29	264	100.0	191	AAV33440	Variant vascular e
30	264	100.0	191	AAV33440	Parapox virus VEGF
31	264	100.0	191	AAV33440	Human VEGF protein
32	264	100.0	191	AAV33440	Wild-type human VE
33	264	100.0	191	AAV33440	Mutant human VEGF
34	264	100.0	191	AAV33440	Mutant human VEGF
35	264	100.0	191	AAV33440	Mutant human VEGF
36	264	100.0	191	AAV33440	Mutant human VEGF
37	264	100.0	191	AAV33440	VEGF encoded by cl
38	264	100.0	191	AAV33440	Amino acid sequenc
39	264	100.0	191	AAV33440	Human vascular end
40	264	100.0	191	AAV33440	Amino acid sequenc
41	264	100.0	191	AAV33440	Human VEGF protein
42	264	100.0	191	AAV33440	Human VEGF165. Ho
43	264	100.0	192	AAV33440	VEGF165 Cys+2. Ho
44	264	100.0	192	AAV33440	VEGF165 Cys+2. Ho
45	264	100.0	208	AAV33440	Amino acid sequenc

#### ALIGNMENTS

RESULT 1	
AAV22023	standard; peptide; 45 AA.
ID	
XX	
XX	
AC	AAV22023:
XX	
DT	26-AUG-1999 (first entry)
XX	
DE	VEGF antagonist peptide.
XX	
KW	VEGF; vascular endothelial growth factor; antagonist; neovascularisation;
KW	angiogenesis; retinal neovascularisation; haemangioma; Kaposi's sarcoma;
KW	solid tumour growth; leukemia; metastasis; psoriasis; osteoarthritis;
KW	angiogenic disease; neovascular glaucoma; diabetic retinopathy; therapy;
KW	rheumatoid arthritis; endometriosis; muscular degeneration;
XX	retinopathy of prematurity.
XX	
OS	Homo sapiens.
XX	
PN	WO9929861-A1.
XX	
PD	17-JUN-1999.
XX	
PF	09-DEC-1998; 98WO-US26103.
XX	
PR	12-DEC-1997; 97US-0069687.
XX	
PR	09-DEC-1997; 97US-0069155.
XX	
PA	(CHIL-) CHILDRENS MEDICAL CENT.
XX	
PI	Klagsbrun M, Soker S;
XX	
DR	WPI: 1999-385607/32.
XX	

PT New peptide antagonists of vascular endothelial growth factor (VEGF)  
 XX  
 XX  
 PS- Claim 1: Page 46; 53pp; English.  
 CC This sequence represents a vascular endothelial growth factor (VEGF)  
 CC antagonist of the invention. The antagonist is a portion of the seventh  
 CC exon of VEGF, and acts as an antagonist to all VEGF isoforms, even if  
 CC they do not have exon 7. The VEGF antagonist peptides can be used to  
 CC treat diseases or disorders associated with VEGF-induced  
 CC neovascularisation or inappropriate angiogenesis. Diseases and disorders  
 CC treated include retinal neovascularisation, haemangiomas, solid tumour  
 CC growth, leukaemia, metastasis, psoriasis, neovascular glaucoma, diabetic  
 CC retinopathy, rheumatoid arthritis, osteoarthritis, endometriosis,  
 CC macular degeneration, and retinopathy of prematurity (ROP), and Kaposi's  
 CC sarcoma. Solid tumours expressing VEGF are also a target for gene  
 CC therapy using the peptide antagonist of the invention, e.g. neoplasms of  
 CC the central nervous system (glioblastomas, astrocytomas, neuroblastomas,  
 CC meningiomas, ependymomas), cancers of hormone-dependent tissues (e.g.  
 CC prostate, testicles, uterus, ovary, mammary carcinoma), melanomas,  
 CC cancers of the lung, and cancers of the gastrointestinal tract. Current  
 CC treatment of angiogenic diseases is inadequate. Although preliminary  
 CC results with antiangiogenic proteins are promising, the proteins are  
 CC relatively large in size and so are difficult to use and produce.  
 CC Antiangiogenic agents that show improvement in size, ease of production,  
 CC stability and/or potency would be desirable. The peptides of the  
 CC invention go some way to achieving these aims.  
 XX  
 SQ Sequence 45 AA:  
 Query Match 100.0%; Score 264; DB 20; Length 45;  
 Best Local Similarity 100.0%; Pred. No. 3.8e-22;  
 Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 OY 1 PCGPCSERRKHLFVDPOTCKSCKNTDSRCARQELNERTCRC 45  
 DB 1 pcgpcseerrkhlfvdpotckscckntdsrckarqelnerterc 45  
 RESULT 2  
 AAR10911  
 ID AAR10911 standard; Protein; 164 AA.  
 XX  
 AC AAR10911;  
 XX  
 DT 08-MAY-1991 (first entry)  
 XX  
 DE Bovine vascular endothelial cell growth factor 164.  
 XX  
 KW Bovine vascular endothelial cell growth factor; angiogenesis;  
 KW wound healing; bVEGF; PDGF.  
 OS Bos taurus.  
 XX  
 PN WO9102058-A.  
 XX  
 PD 21-FEB-1991.  
 XX  
 PF 27-JUL-1990; 90WO-US04227.  
 XX  
 PR 14-DEC-1989; 89US-0450883.  
 PR 27-JUL-1989; 89US-0387545.  
 XX  
 PA (CALB-) CALIF BIOTECHN INC.  
 XX  
 PI Tischer ER, Abrahamam, Fiddes JC, Mitchell RL.  
 XX  
 DR WPI, 1991-073534/10.  
 DR N-PSDB; AAQ10791.  
 XX  
 PT DNA encoding vascular endothelial cell growth factor - used for  
 PT producing the factor for angiogenesis and re-endothelialisation  
 PT in wound healing

XX  
 XX  
 PS Disclosure; Fig 6(1-3); 94pp; English.  
 CC Bovine folliculo stellate cells were used in the process of  
 CC obtaining cDNA encoding bVEGF (164 amino acids from). The probes  
 CC represented in AAQ10806 and -07 were used in the screening procedures.  
 CC See AAQ10796 for bVEGF120 which is obtained by alternative splicing of  
 CC this sequence, i.e. bases 342-473 (amino acids 115-158) are spliced.  
 CC The product can be used for angiogenesis and re-endothelialisation  
 CC of inner vascular surfaces in wound healing, e.g. treatment of full-  
 CC thickness wounds such as dermal ulcers, venous ulcers and diabetic  
 CC ulcers, burns, in surgery, in balloon angioplasty and for the in  
 CC vitro culturing of endothelial cells. Hybrid growth factors of PDGF  
 CC and VEGF can exhibit a mitogenic profile between each factor and  
 CC can be used for wound healing or as inhibitors of angiogenesis for  
 CC e.g. preventing the growth of tumours.  
 CC VEGF analogues in which Cys residues are substid. are more stable.  
 CC See also AAQ10791-93; AAQ10796-97; AAQ10806-08 and AAQ11099.  
 XX  
 SQ Sequence 164 AA:  
 Query Match 100.0%; Score 264; DB 12; Length 164;  
 Best Local Similarity 100.0%; Pred. No. 1.3e-21;  
 Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 OY 1 PCGPCSERRKHLFVDPOTCKSCKNTDSRCARQELNERTCRC 45  
 DB 115 pcgpcseerrkhlfvdpotckscckntdsrckarqelnerterc 159  
 RESULT 3  
 AAR38920  
 ID AAR38920 standard; Protein; 164 AA.  
 XX  
 AC AAR38920;  
 XX  
 DT 28-OCT-1993 (first entry)  
 XX  
 DE Bovine VEGF-164.  
 XX  
 KW Angiogenesis; wound healing; mitogen; vascular endothelial cells;  
 KW Vascular Endothelial Cell Growth Factor; bVEGF-164; bVEGF-120.  
 XX  
 OS Bos.  
 XX  
 PN Key Location/Qualifiers  
 XX  
 FT Region 114..158  
 FT /note="encoded by exon which is absent in the  
 FT alternatively spliced coding sequence  
 FT which encodes bVEGF-120"  
 XX  
 PN US5219739-A.  
 XX  
 PD 15-JUN-1993.  
 XX  
 PF 27-JUL-1989; 89US-0387545.  
 XX  
 PR 27-JUL-1989; 89US-0387545.  
 PR 14-DEC-1989; 89US-0450883.  
 PR 27-JUL-1990; 90US-0559041.  
 XX  
 PA (SCIO-) SCIOS NOVA INC.  
 XX  
 PI Abraham JA, Fiddes JC, Mitchell RL, Tischer EG;  
 XX  
 DR WPI, 1993-205302/25.  
 DR P-PSDB; AAQ44259.  
 XX  
 PT Isolated DNA sequences, expression vectors and transformant cells  
 PT - used for large scale prodn. of vascular endothelial cell growth  
 PT factor, for treating wounds in which neo-vascularisation is  
 PT required

XX Example 4 and Claim 1; Fig 6; 40pp; English.  
PS  
XX  
CC The sequence of AAQ44259 contains an open reading frame corresponding  
CC to the 164 amino acid bovine vascular endothelial cell growth  
CC factor (hVEGF-164, l.e. AAR38920). Alternative splicing of the  
CC sequence gives a shorter coding sequence which encodes the 120  
CC amino acid hVEGF (see AAR38916).  
XX  
SQ Sequence 164 AA:  
  
Query Match 100.0%; Score 264; DB 14; Length 164;  
Best Local Similarity 100.0%; Pred. No. 1.3e-21;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
  
QY 1 PCGPGSERRRKHLFVQDPQTCKSCSKNTDSRCKARQLELNERTC 45  
Db 115 pcgpgserrrkhlftvqdpqtckscskntdsrckarqlelnertc 159  
\_

RESULT 4  
AAR38921  
ID AAR38921 standard; Protein: 165 AA.  
XX  
AC AAR38921;  
XX  
DT 28-OCT-1993 (first entry)  
XX  
DE Human VEGF-165.  
XX  
KM Angiogenesis; wound healing; mitogen; vascular endothelial cells;  
KM Vascular Endothelial Cell Growth Factor; hVEGF-165; hVEGF-121.  
XX  
OS Homo sapiens.  
XX  
FH Key Location/Qualifiers  
FT MISC-difference 7 /note="inserted amino acid relative to hVEGF"  
FT Region 115..159 /note="replaced by Lys in hVEGF-121"  
FT  
XX  
XX US5219739-A.  
XX  
XX 15-JUN-1993.  
XX  
XX 27-JUL-1989; 89US-0387545.  
XX  
XX 27-JUL-1989; 89US-0387545.  
XX  
XX 14-DEC-1989; 89US-0450883.  
XX  
XX 27-JUL-1990; 90US-0559041.  
XX  
XX (SCIO-) SCIOS NOVA INC.  
XX  
XX Abraham JA, Fiddes JC, Mitchell RL, Tischer ES;  
XX  
XX WPI: 1993-205302/25.  
XX  
XX N-PSDB; AAQ44260.  
XX  
XX  
XX Isolated DNA sequences, expression vectors and transformant cells  
XX - used for large scale prodn. of vascular endothelial cell growth  
XX factor, for treating wounds in which neo-vascularisation is  
XX required  
XX  
XX Example 7; Fig 7; 40pp; English.  
XX  
XX The sequence of AAQ44260 contains an open reading frame corresponding  
XX to the 165 amino acid human vascular endothelial cell growth  
XX factor (hVEGF-165, see AAR38921). Alternative splicing of the  
XX sequence gives a shorter coding sequence which encodes the 121  
XX amino acid hVEGF (see AAR42607). The full-length coding sequences can  
XX be generated using PCR with human foetal vascular smooth muscle  
XX poly-A+ RNA as template.

XX  
SQ Sequence 165 AA;  
  
Query Match 100.0%; Score 264; DB 14; Length 165;  
Best Local Similarity 100.0%; Pred. No. 1.3e-21;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
  
QY 1 PCGPGSERRRKHLFVQDPQTCKSCSKNTDSRCKARQLELNERTC 45  
Db 116 pcgpgserrrkhlftvqdpqtckscskntdsrckarqlelnertc 160  
\_

RESULT 5  
AAW31085  
ID AAW31085 standard; Protein: 165 AA.  
XX  
AC AAW31085;  
XX  
DT 16-JAN-1998 (first entry)  
XX  
DE Vascular endothelial growth factor variant used in drug screening.  
XX  
XX VEGF; vascular endothelial growth factor; variant; mutant;  
XX substitution; drug screening; kinase domain binding region; KDR;  
XX FMS-like tyrosine kinase binding region; FLT-1; drug screening;  
XX testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;  
XX neoplasia.  
XX  
XX Homo sapiens.  
XX  
OS Synthetic.  
XX  
FH Key Location/Qualifiers  
FT MISC-difference 63 /note="wild-type Asp replaced by Ala"  
FT MISC-difference 64 /note="wild-type Glu replaced by Ala"  
FT MISC-difference 67 /note="wild-type Glu replaced by Ala"  
FT  
XX  
XX W09708313-A1.  
XX  
XX 06-MAR-1997.  
XX  
XX 23-AUG-1996; 96MO-US13621.  
XX  
XX 02-AUG-1996; 96US-0691791.  
XX  
XX 25-AUG-1995; 95US-0002827.  
XX  
XX 05-DEC-1995; 95US-0567200.  
XX  
XX (GETH ) GENENTECH INC.  
XX  
XX Cunningham BC, Ferrara N, Keyt B, Li B, Nguyen FH;  
XX  
XX Wells JA;  
XX  
XX WPI: 1997-179270/16.  
XX  
XX Vascular endothelial cell growth factor variant - used to identify  
XX candidates having agonistic or antagonistic properties with respect  
XX to KDR and/or FLT receptor binding  
XX  
XX Claim 6; Page -; 130pp; English.  
XX  
XX AAW31085-W31096 are vascular endothelial growth factor (VEGF) variants.  
XX  
XX Especially preferred modifications comprise mutations in the kinase  
XX domain binding region (KDR) or the FMS-like tyrosine kinase binding  
XX region (FLT-1). All indicated residues are preferably replaced with  
XX alanine. The variants may be used in an assay for identifying  
XX candidate compositions having agonistic or antagonistic properties  
XX with respect to KDR and/or FLT receptor binding, by measuring the  
XX effect the candidate has on the binding properties of the variants  
XX to the KDR and/or FLT-1 receptors. Compositions identified may be  
XX useful for treating indications where vasculogenesis or angiogenesis

CC is desired for treatment of an underlying disease state.  
CC N.B. This sequence is not given in the specification; it was created  
CC from a claimed specified mutant of wild-type mature VEGF.  
XX  
SQ Sequence 165 AA;

-Query Match 100.0%; Score 264; DB 18; Length 165;  
Best Local Similarity 100.0%; Pred. No. 1.3e-21;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPCSERRRKHLFVDPOTCKSCCKNTDSRCARQLEINERTC 45  
Db 116 pcgpcserrrkhlfdvdpotckscckntdsrckarqleinertrc 160

RESULT 6  
AAW31086  
ID AAW31086 standard; Protein; 165 AA.

AC AAW31086;

DT 16-JAN-1998 (first entry)

DE Vascular endothelial growth factor variant used in drug screening.

KM VEGF; vascular endothelial growth factor; variant; mutant;

KM substitution; drug screening; kinase domain binding region; KDR;

KM FMS-like tyrosine kinase binding region; FLT-1; drug screening;

KM testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;

KM neoplasia.

KW

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AAW31085-W31096 are vascular endothelial growth factor (VEGF) variants.  
Especially preferred modifications comprise mutations in the kinase  
domain binding region (KDR) or the FMS-like tyrosine kinase binding  
region (FLT-1). All indicated residues are preferably replaced with  
alanine. The variants may be used in an assay for identifying  
candidate compositions having agonistic or antagonistic properties  
with respect to KDR and/or FLT receptor binding, by measuring the

CC effect the candidate has on the binding properties of the variants  
CC to the KDR and/or FLT-1 receptors. Compositions identified may be  
CC useful for treating indications where vasculogenesis or angiogenesis  
CC is desired for treatment of an underlying disease state.  
CC N.B. This sequence is not given in the specification; it was created  
CC from a claimed specified mutant of wild-type mature VEGF.  
XX  
SQ Sequence 165 AA;

-Query Match 100.0%; Score 264; DB 18; Length 165;  
Best Local Similarity 100.0%; Pred. No. 1.3e-21;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPCSERRRKHLFVDPOTCKSCCKNTDSRCARQLEINERTC 45  
Db 116 pcgpcserrrkhlfdvdpotckscckntdsrckarqleinertrc 160

RESULT 7  
AAW31087  
ID AAW31087 standard; Protein; 165 AA.

AC AAW31087;

DT 16-JAN-1998 (first entry)

DE Vascular endothelial growth factor variant used in drug screening.

KM VEGF; vascular endothelial growth factor; variant; mutant;

KM substitution; drug screening; kinase domain binding region; KDR;

KM FMS-like tyrosine kinase binding region; FLT-1; drug screening;

KM testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;

KM neoplasia.

KW

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AAW31085-W31096 are vascular endothelial growth factor (VEGF) variants.  
Especially preferred modifications comprise mutations in the kinase  
domain binding region (KDR) or the FMS-like tyrosine kinase binding  
region (FLT-1). All indicated residues are preferably replaced with  
alanine. The variants may be used in an assay for identifying  
candidate compositions having agonistic or antagonistic properties  
with respect to KDR and/or FLT receptor binding, by measuring the

PS Claim 6; Page -: 130pp; English.

XX  
CC AA#31085-W31096 are vascular endothelial growth factor (VEGF) variants.  
CC Especially preferred modifications comprise mutations in the kinase  
CC domain binding region (KDR) or the FMS-like tyrosine kinase binding  
CC region (FLT-1). All indicated residues are preferably replaced with  
CC alanine. The variants may be used in an assay for identifying  
CC candidate compositions having agonistic or antagonistic properties  
CC with respect to KDR and/or FLT receptor binding, by measuring the  
CC effect the candidate has on the binding properties of the variants  
CC to the KDR and/or FLT-1 receptors. Compositions identified may be  
CC useful for treating indications where vasculogenesis or angiogenesis  
CC is desired for treatment of an underlying disease state.  
CC N.B. This sequence is not given in the specification, it was created  
CC from a claimed specified mutant of wild-type mature VEGF.

XX Sequence 165 AA;  
SD

-Query Match 100.0%; Score 264; DB 18; Length 165;  
Best Local Similarity 100.0%; Prid. No. 1.3e-21;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Oy 1 PCGPCSERRKHLEFYDDPOTCKCCKNTQSRCAKARLEINERQCRC 45  
| | | | | | | | | | | | | | | | | | | | |  
Db 116 pcgpcserikhlfvqdpqtckscsknldsrcaqljeinertcrc 160

RESULT 8  
AAW31088  
ID AAW31088 standard; Protein: 165 AA.  
AC  
XX AAW31088;  
DT 16-JAN-1998 (first entry)  
XX

Vascular endothelial growth factor variant used in drug screening.

DE  
XX VEGF; vascular endothelial growth factor; variant; mutant;  
KW substitution; drug screening; kinase domain binding region; KDR;  
KM FMS-like tyrosine kinase binding region; FLT-1; drug screening;  
KW testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;  
neoplasia.  
XX  
XX Homo sapiens.  
OS Synthetic.  
OS  
XX

Homo sapiens.  
OS Synthetic.  
OS  
XX

Key Location/Qualifiers  
FT Misc-difference 46 /note= "wild-type Ile replaced by Ala"  
FT FT Misc-difference 79 /note= "wild-type Glu replaced by Ala"  
FT FT Misc-difference 83 /note= "wild-type Ile replaced by Ala"  
FT /note= "wild-type Ile replaced by Ala"

WT09708313-A1.  
PN  
XX  
PD 06-MAR-1997.  
XX  
PP 23-AUG-1996; 96WO-US13621.  
XX  
XX 02-AUG-1996; 96US-0691791.  
PR 25-AUG-1995; 95US-0002827.  
PR 05-DEC-1995; 95US-0567200.  
XX  
PA (GETH ) GENENTECH INC.  
PI Cunnigham BC, Ferrara N, Keyt B, Li B, Nguyen FH,  
PI Wells JA;  
XX  
XX WPI: 1997-179270/16.  
XX DR  
XX VT Vascular endothelial cell growth factor variant - used to identify

PT	candidates having agonistic or antagonistic properties with respect
PT	to KDR and/or FLT receptor binding
XX	
PS	Claim 18; Page -: 130pp; English.
XX	
CC	AAMW31085-W31096 are vascular endothelial growth factor (VEGF) variants.
CC	Especially preferred modifications comprise mutations in the kinase
CC	domain binding region (KDR) or the FMS-like tyrosine kinase binding
CC	region (FLT-1). All indicated residues are preferably replaced with
CC	alanine. The variants may be used in an assay for identifying
CC	candidate compositions having agonistic or antagonistic properties
CC	with respect to KDR and/or FLT receptor binding, by measuring the
CC	effect the candidate has on the binding properties of the variants
CC	to the KDR and/or FLT-1 receptors. Compositions identified may be
CC	useful for treating indications where vasculogenesis or angiogenesis
CC	is desired for treatment of an underlying disease state.
CC	N.B. This sequence is not given in the specification, it was created
CC	from a claimed specified mutant of wild-type mature VEGF.
XX	
SQ	Sequence    165 AA;
	Query Match                      100.0%; Score 264; DB 18; Length 165;
	Best Local Similarity         100.0%; Pred. NO. 1.3e-21;
	Matches    45; Conservative    0; Mismatches    0; Indels        0; Gaps        0;
OY	1 PCGPGSERRKHLEVDPPOTCKSCKNTPDSRCKARPLEINERTCRC 45       Db    116 pCGPGERRHKLfVgdpqtkcscnhtsrckarglneirtcr 160 
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ID	AAMW31089
XX	AAMW31089 standard; Protein: 165 AA.
AC	AAMW31089;
XX	
DT	16-JAN-1998 (first entry)
XX	
DE	Vascular endothelial growth factor variant used in drug screening.
XX	
XX	VEGF; vascular endothelial growth factor; variant; mutant; KW substitution; drug screening; kinase domain binding region; KDR; KM FMS-like tyrosine kinase binding region; FLT-1; drug screening; KW testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour; neoplasia.
XX	
OS	Homo sapiens.
OS	Synthetic.
FH	
FT	Key                                  Location/Qualifiers
FT	Misc-difference    17               /note= "wild-type Phe replaced by Ala"
FT	Misc-difference    43               /note= "wild-type Ile replaced by Ala"
FT	Misc-difference    64               /note= "wild-type Glu replaced by Ala"
XX	
PX	WO9708313-A1.
XX	
PD	06-MAR-1997.
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PF	23-AUG-1996;                      96WO-US13621.
XX	
PR	02-AUG-1996;                      96US-0691791.
PR	25-AUG-1995;                      95US-0002827.
PR	05-DEC-1995;                      95US-0567200.
XX	
PA	(GETH ) GENENTECH INC.
XX	
EI	Cunningham BC, Ferrara N, Keyt B, Li B, Nguyen FH;
TI	Wells JA;
XX	

DR WPI; 1997-179270/16.  
 XX Vascular endothelial cell growth factor variant - used to identify  
 PT candidates having agonistic or antagonistic properties with respect  
 PT to KDR and/or FLT receptor binding  
 XX  
 PS Claim 18; Page -: 130pp; English.  
 XX  
 CC AAW31085-W31096 are vascular endothelial growth factor (VEGF) variants.  
 CC Especially preferred modifications comprise mutations in the kinase  
 CC domain binding region (KDR) or the FMS-like tyrosine kinase binding  
 CC region (FLT-1). All indicated residues are preferably replaced with  
 CC alanine. The variants may be used in an assay for identifying  
 CC candidate compositions having agonistic or antagonistic properties  
 CC with respect to KDR and/or FLT receptor binding, by measuring the  
 CC effect the candidate has on the binding properties of the variants  
 CC to the KDR and/or FLT-1 receptors. Compositions identified may be  
 CC useful for treating indications where vasculogenesis or angiogenesis  
 CC is desired for treatment of an underlying disease state.  
 CC N.B. This sequence is not given in the specification, it was created  
 CC from a claimed specified mutant of wild-type mature VEGF.  
 CC  
 XX  
 SQ Sequence 165 AA;  
 OY 1 PCGPGCSERRKHLFVDPQTCSCSKNTDSRCRKARQLELNERC RC 45  
 Db 116 pcgpcseerrkhlftvgdpqtcscskntdsrckarqlelnertrc 160

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 ID AAW31090 standard; Protein; 165 AA.  
 XX  
 AC AAW31090;  
 XX  
 DT 16-JAN-1998 (first entry)  
 XX  
 DE Vascular endothelial growth factor variant used in drug screening.  
 XX  
 KW VEGF; vascular endothelial growth factor; variant; mutant;  
 KW substitution; drug screening; kinase domain binding region; KDR;  
 KW FMS-like tyrosine kinase binding region; FLT-1; drug screening;  
 KW testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;  
 KW neoplasia.  
 XX  
 OS Homo sapiens.  
 OS Synthetic.  
 XX  
 FH Key Location/Qualifiers  
 FT MISC-difference 17 /note= "wild-type Phe replaced by Ala"  
 FT MISC-difference 43 /note= "wild-type Ile replaced by Ala"  
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 FT MISC-difference 64 /note= "wild-type Glu replaced by Ala"  
 FT MISC-difference 79 /note= "wild-type Glu replaced by Ala"  
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 PD 06-MAR-1997.  
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 PF 23-AUG-1996; 96WO-US13621.  
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PR 02-AUG-1996; 96US-0691791.  
 PR 25-AUG-1995; 95US-0002827.  
 PR 05-DEC-1995; 95US-0567200.  
 XX  
 PA (GETH ) GENENTECH INC.  
 XX  
 XX Cunningham BC, Ferrara N, Keyt B, Li B, Nguyen FH;  
 PI Wells JA;  
 PI  
 DR WPI; 1997-179270/16.  
 XX  
 PT Vascular endothelial cell growth factor variant - used to identify  
 PT candidates having agonistic or antagonistic properties with respect  
 PT to KDR and/or FLT receptor binding  
 XX  
 PS Claim 18; Page -: 130pp; English.  
 XX  
 CC AAW31085-W31096 are vascular endothelial growth factor (VEGF) variants.  
 CC Especially preferred modifications comprise mutations in the kinase  
 CC domain binding region (KDR) or the FMS-like tyrosine kinase binding  
 CC region (FLT-1). All indicated residues are preferably replaced with  
 CC alanine. The variants may be used in an assay for identifying  
 CC candidate compositions having agonistic or antagonistic properties  
 CC with respect to KDR and/or FLT receptor binding, by measuring the  
 CC effect the candidate has on the binding properties of the variants  
 CC to the KDR and/or FLT-1 receptors. Compositions identified may be  
 CC useful for treating indications where vasculogenesis or angiogenesis  
 CC is desired for treatment of an underlying disease state.  
 CC N.B. This sequence is not given in the specification, it was created  
 CC from a claimed specified mutant of wild-type mature VEGF.  
 CC  
 XX  
 SQ Sequence 165 AA;  
 OY 1 PCGPGCSERRKHLFVDPQTCSCSKNTDSRCRKARQLELNERC RC 45  
 Db 116 pcgpcseerrkhlftvgdpqtcscskntdsrckarqlelnertrc 160

RESULT 11  
 AAW31091  
 ID AAW31091 standard; Protein; 165 AA.  
 XX  
 AC AAW31091;  
 XX  
 DT 16-JAN-1998 (first entry)  
 XX  
 DE Vascular endothelial growth factor variant used in drug screening.  
 XX  
 KW VEGF; vascular endothelial growth factor; variant; mutant;  
 KW substitution; drug screening; kinase domain binding region; KDR;  
 KW FMS-like tyrosine kinase binding region; FLT-1; drug screening;  
 KW testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;  
 KW neoplasia.  
 XX  
 OS Homo sapiens.  
 OS Synthetic.  
 XX  
 FH Key Location/Qualifiers  
 FT MISC-difference 46 /note= "wild-type Ile replaced by Ala"  
 FT MISC-difference 64 /note= "wild-type Glu replaced by Ala"  
 FT MISC-difference 83 /note= "wild-type Glu replaced by Ala"  
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XX PF 23-AUG-1996; 96WO-US13621.  
XX PR 02-AUG-1996; 96US-0691791.  
XX PR 25-AUG-1995; 95US-0002827.  
XX PR 05-DEC-1995; 95US-0567200.  
XX (GETH ) GENENTECH INC.  
XX PA Cunningham BC, Ferrara N, Keyt B, L1 B, Nguyen FH;  
XX PI Wells JA;  
XX WPI; 1997-179270/16.  
XX DR  
XX  
XX PT Vascular endothelial cell growth factor variant - used to identify  
XX PT candidates having agonistic or antagonistic properties with respect  
XX PT to KDR and/or FLT receptor binding  
XX PS  
XX Claim 22; Page -: 130pp; English.  
XX  
XX CC AAM31085-W31096 are vascular endothelial growth factor (VEGF) variants.  
XX CC Especially preferred modifications comprise mutations in the kinase  
XX CC domain binding region (KDR) or the FMS-like tyrosine kinase binding  
XX CC region (FLT-1). All indicated residues are preferably replaced with  
XX CC alanine. The variants may be used in an assay for identifying  
XX CC candidate compositions having agonistic or antagonistic properties  
XX CC with respect to KDR and/or FLT receptor binding, by measuring the  
XX CC effect the candidate has on the binding properties of the variants  
XX CC to the KDR and/or FLT-1 receptors. Compositions identified may be  
XX CC useful for treating indications where vasculogenesis or angiogenesis  
XX CC is desired for treatment of an underlying disease state.  
XX CC N.B. This sequence is not given in the specification, it was created  
XX CC from a claimed specified mutant of wild-type mature VEGF.  
XX SQ Sequence 165 AA;  
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Query Match 100.0%; Score 264; DB 18; Length 165;  
Best Local Similarity 100.0%; Pred. No. 1.3e-21;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 1 PCGCSERRKHLFVQDPOTCKSCKNMDSRCKARQLEINERTC 45  
DB 116 pcgcserrkhlfvqdpotckscskntsrckarqlneirtc 160  
RESULT 12  
AAM31092  
ID AAM31092 standard; Protein; 165 AA.  
XX  
XX AAM31092;  
XX  
XX DT 16-JAN-1998 (first entry)  
XX DE Vascular endothelial growth factor variant used in drug screening.  
XX  
XX VEGF; vascular endothelial growth factor; variant; mutant;  
XX substitution; drug screening; kinase domain binding region; KDR;  
XX FMS-like tyrosine kinase binding region; FLT-1; drug screening;  
XX testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;  
XX neoplasia.  
XX KW  
XX  
XX OS Homo sapiens.  
XX OS Synthetic.  
XX  
XX FH Key Location/Qualifiers  
XX FT MISC-difference 17  
XX FT /note= "wild-type Phe replaced by Ala"  
XX FT MISC-difference 43  
XX FT /note= "wild-type Ile replaced by Ala"  
XX FT MISC-difference 79  
XX FT /note= "wild-type Gln replaced by Ala"  
XX FT

PN WO9708313-A1.  
XX PD 06-MAR-1997.  
XX  
XX PF 23-AUG-1996; 96WO-US13621.  
XX PR 02-AUG-1996; 96US-0691791.  
XX PR 25-AUG-1995; 95US-0002827.  
XX PR 05-DEC-1995; 95US-0567200.  
XX (GETH ) GENENTECH INC.  
XX PA Cunningham BC, Ferrara N, Keyt B, L1 B, Nguyen FH;  
XX PI Wells JA;  
XX WPI; 1997-179270/16.  
XX DR  
XX  
XX PT Vascular endothelial cell growth factor variant - used to identify  
XX PT candidates having agonistic or antagonistic properties with respect  
XX PT to KDR and/or FLT receptor binding  
XX PS  
XX Claim 24; Page -: 130pp; English.  
XX  
XX CC AAM31085-W31096 are vascular endothelial growth factor (VEGF) variants.  
XX CC Especially preferred modifications comprise mutations in the kinase  
XX CC domain binding region (KDR) or the FMS-like tyrosine kinase binding  
XX CC region (FLT-1). All indicated residues are preferably replaced with  
XX CC alanine. The variants may be used in an assay for identifying  
XX CC candidate compositions having agonistic or antagonistic properties  
XX CC with respect to KDR and/or FLT receptor binding, by measuring the  
XX CC effect the candidate has on the binding properties of the variants  
XX CC to the KDR and/or FLT-1 receptors. Compositions identified may be  
XX CC useful for treating indications where vasculogenesis or angiogenesis  
XX CC is desired for treatment of an underlying disease state.  
XX CC N.B. This sequence is not given in the specification, it was created  
XX CC from a claimed specified mutant of wild-type mature VEGF.  
XX SQ Sequence 165 AA;  
SQ  
Query Match 100.0%; Score 264; DB 18; Length 165;  
Best Local Similarity 100.0%; Pred. No. 1.3e-21;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 1 PCGCSERRKHLFVQDPOTCKSCKNMDSRCKARQLEINERTC 45  
DB 116 pcgcserrkhlfvqdpotckscskntsrckarqlneirtc 160  
RESULT 13  
AAM31093  
ID AAM31093 standard; Protein; 165 AA.  
XX  
XX AAM31093;  
XX  
XX DT 16-JAN-1998 (first entry)  
XX DE Vascular endothelial growth factor variant used in drug screening.  
XX  
XX VEGF; vascular endothelial growth factor; variant; mutant;  
XX substitution; drug screening; kinase domain binding region; KDR;  
XX FMS-like tyrosine kinase binding region; FLT-1; drug screening;  
XX testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;  
XX neoplasia.  
XX KW  
XX  
XX OS Homo sapiens.  
XX OS Synthetic.  
XX  
XX FH Key Location/Qualifiers  
XX FT MISC-difference 43  
XX FT /note= "wild-type Ile replaced by Ala"  
XX FT MISC-difference 46  
XX FT /note= "wild-type Ile replaced by Ala"  
XX FT

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FT      Misc-difference 79      /note= "wild-type Cln replaced by Ala"
FT      Misc-difference 83      /note= "wild-type Ile replaced by Ala"
XX      MO9708313-A1.
XX      PD      06-MAR-1997.
XX      PE      23-AUG-1996; 96WO-US13621.
XX      PR      02-AUG-1996; 96US-0691791.
XX      PR      25-AUG-1995; 95US-0002827.
XX      PR      05-DEC-1995; 95US-0567200.
XX      PA      (GETH ) GENENTECH INC.
XX      PI      Cunningham BC, Ferrara N, Keyt B, Li B, Nguyen FH,
XX      PI      Wells JA;
XX      DR      WPI; 1997-179270/16.
XX      PT      Vascular endothelial cell growth factor variant - used to identify
XX      PT      candidates having agonistic or antagonistic properties with respect
XX      PT      to KDR and/or Flt receptor binding
XX      PS      Claim 26; Page -: 130pp; English.
XX      CC      AAW31085-W31096 are vascular endothelial growth factor (VEGF) variants.
XX      CC      Especially preferred modifications comprise mutations in the kinase
XX      CC      domain binding region (KDR) or the FMS-like tyrosine kinase binding
XX      CC      region (Flt-1). All indicated residues are preferably replaced with
XX      CC      alanine. The variants may be used in an assay for identifying
XX      CC      candidate compositions having agonistic or antagonistic properties
XX      CC      with respect to KDR and/or Flt receptor binding, by measuring the
XX      CC      effect the candidate has on the binding properties of the variants
XX      CC      to the KDR and/or Flt-1 receptors. Compositions identified may be
XX      CC      useful for treating indications where vasculogenesis or angiogenesis
XX      CC      is desired for treatment of an underlying disease state.
XX      CC      N.B. This sequence is not given in the specification, it was created
XX      CC      from a claimed specified mutant of wild-type mature VEGF.
XX      SQ      Sequence 165 AA;

Query Match 100.0%; Score 264; DB 18; Length 165;
Best Local Similarity 100.0%; Pred. No. 1.3e-21;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0

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XX      AAW31094;
XX      DT      16-JAN-1998 (first entry)
XX      DE      Vascular endothelial growth factor variant used in drug screening.
XX      KW      VEGF; vascular endothelial growth factor; variant; mutant;
XX      KW      substitution; drug screening; kinase domain binding region; KDR;
XX      KW      FMS-like tyrosine kinase binding region; Flt-1; drug screening;
XX      KW      testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;
XX      KW      neoplasia.
XX      OS      Homo sapiens.
XX      OS      Synthetic.
XX

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FH Key Location/Qualifiers
FT Misc-difference 17 /note= "wild-type Phe replaced by Ala"
FT FT Misc-difference 64 /note= "wild-type Glu replaced by Ala"
XX XX
XX PN W09708313-A1.
XX PD
XX PD 06-MAR-1997.
XX PF 23-AUG-1996; 96WO-US13621.
XX PF 02-AUG-1996; 96US-0691791.
XX PR 25-AUG-1995; 95US-0002827.
XX PR 05-DEC-1995; 95US-0567200.
XX PA (GETH ) GENENTECH INC.
XX XX
XX PI Cunningham BC, Ferrara N, Keyt B, Li B, Nguyen FH;
XX PI Wells JA;
XX DR WPI: 1997-179270/16.
XX PT Vascular endothelial cell growth factor variant - used to identify
XX PT candidates having agonistic or antagonistic properties with respect
XX PT to KDR and/or Flt receptor binding
XX PS Claim 28; Page -: 130pp; English.
XX XX
XX AA AAW31085-W31096 are vascular endothelial growth factor (VEGF) variants.
CC CC Especially preferred modifications comprise mutations in the kinase
CC domain binding region (KDR) or the FMS-like tyrosine kinase binding
CC region (FLT-1). All indicated residues are preferably replaced with
CC alanine. The variants may be used in an assay for identifying
CC candidate compositions having agonistic or antagonistic properties
CC with respect to KDR and/or Flt receptor binding, by measuring the
CC effect the candidate has on the binding properties of the variants
CC to the KDR and/or FLT-1 receptors. Compositions identified may be
CC useful for treating indications where vasculogenesis or angiogenesis
CC is desired for treatment of an underlying disease state.
CC N.B. This sequence is not given in the specification, it was created
CC from a claimed specified mutant of wild-type mature VEGF.
XX XX
SQ Sequence 165 AA;

Query Match 100.0%; Score 264; DB 18; Length 165;
Best Local Similarity 100.0%; Pred. No. 1.3e-21;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPCSERRKHLEFYDDPOTCKSCCNTSRRCAROLELNERFCRC 45
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Db 116 pcgpcserrrkhlfvddpqtkcsckntdsrckarjleinerfcrc 160

RESULT 15
ID AAW31095
AC AAW31095;
AA AAW31095;
DT 16-JAN-1998 (first entry)
DE Vascular endothelial growth factor variant used in drug screening.
XX
XX VEGF; vascular endothelial growth factor; variant; mutant;
KW substitution; drug screening; kinase domain binding region; KDR;
KW FMS-like tyrosine kinase binding region; FLT-1; drug screening;
KW testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;
KW neoplasia.
XX
XX Homo sapiens.
OS Synthetic.
```



```

XX      Key      Location/Qualifiers
FH      Misc-difference 17
FT      /note= "wild-type Phe replaced by Ala"
FT      Misc-difference 46
FT      /note= "wild-type Ile replaced by Ala"
FT      Misc-difference 64
FT      /note= "wild-type Glu replaced by Ala"
FT      Misc-difference 83
FT      /note= "wild-type Ile replaced by Ala"
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XX      W09708313-A1.
XX
XX      06-MAR-1997.
XX
XX      23-AUG-1996; 96WO-US13621.
XX
XX      02-AUG-1996; 96US-0691791.
XX      25-AUG-1995; 95US-0002827.
XX      05-DEC-1995; 95US-0567200.
XX
XX      (GETH ) GENENTECH INC.
XX
XX      Cunningham BC, Ferrara N, Keyt B, Li B, Nguyen FH;
XX      Wells JA;
XX
XX      WPI; 1997-179270/16.
XX
XX      Vascular endothelial cell growth factor variant - used to identify
XX      candidates having agonistic or antagonistic properties with respect
XX      to KDR and/or FLT receptor binding
XX
XX      Claim 30; Page -: 130pp; English.
XX
XX      AA031085-W31096 are vascular endothelial growth factor (VEGF) variants.
XX      Especially preferred modifications comprise mutations in the kinase
XX      domain binding region (KDR) or the FMS-like tyrosine kinase binding
XX      region (FLT-1). All indicated residues are preferably replaced with
XX      alanine. The variants may be used in an assay for identifying
XX      candidate compositions having agonistic or antagonistic properties
XX      with respect to KDR and/or FLT receptor binding, by measuring the
XX      effect the candidate has on the binding properties of the variants
XX      to the KDR and/or FLT-1 receptors. Compositions identified may be
XX      useful for treating indications where vasculogenesis or angiogenesis
XX      is desired for treatment of an underlying disease state.
XX      N.B. This sequence is not given in the specification, it was created
XX      from a claimed specified mutant of wild-type mature VEGF.
XX
XX      Sequence 165 AA;
XX
XX      Query Match      100.0%; Score 264; DB 18; Length 165;
XX      Best Local Similarity 100.0%; Pred. No. 1.3e-21;
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XX      |||||||
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Search completed: September 24, 2001, 16:14:26  
 Job time: 82 sec

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GenCore version 4.5  
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OW protein - protein search, using sw model

Run on: September 24, 2001, 16:13:04 : Search time 24.64 Seconds  
(Without alignments)  
37.604 Million cell updates/sec

Title: US-09-579-420-1

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Scoring table: BLOSUM62  
Gapop 10.0 , Gapect 0.5

Searched: 197339 seqs, 20590346 residues

Total number of hits satisfying chosen parameters: 197339

Minimum DB seq length: 0  
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Database : Listing first 45 summaries

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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

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2	264	100.0	164	6	5219739-17 Patent No. 5219739
3	264	100.0	164	6	5219739-18 Patent No. 5219739
4	264	100.0	165	6	5194596-18 Patent No. 5194596
5	264	100.0	165	6	5219739-19 Patent No. 5219739
6	264	100.0	190	6	5332671-3 Patent No. 5332671
7	264	100.0	191	3	US-08-567-200A-2 Sequence 2, Appl1
8	264	100.0	191	3	US-08-807-992B-2 Sequence 2, Appl1
9	264	100.0	191	3	US-08-691-794-2 Sequence 2, Appl1
10	264	100.0	191	4	US-08-795-430-56 Sequence 56, Appl1
11	264	100.0	191	6	5332671-4 Patent No. 5332671
12	264	100.0	214	6	5240848-11 Patent No. 5240848
13	264	100.0	215	3	US-08-807-992B-3 Sequence 3, Appl1
14	264	100.0	215	4	US-08-586-039B-49 Sequence 49, Appl1
15	264	100.0	215	6	5219739-22 Patent No. 5219739
16	264	100.0	215	6	5240848-7 Patent No. 5240848
17	264	100.0	231	5	PCT-US96-09001-10 Sequence 10, Appl1
18	264	100.0	232	2	US-08-989-811-7 Sequence 7, Appl1
19	264	100.0	232	3	US-08-807-992B-4 Sequence 4, Appl1
20	264	100.0	232	3	US-09-042-105-7 Sequence 7, Appl1
21	258	97.7	232	2	US-08-824-996-9 Sequence 9, Appl1
22	249	94.3	189	1	US-08-469-427A-15 Sequence 15, Appl1
23	249	94.3	190	2	US-08-569-063C-20 Sequence 20, Appl1
24	249	94.3	190	4	US-08-586-039B-31 Sequence 31, Appl1
25	249	94.3	214	4	US-08-586-039B-35 Sequence 35, Appl1
26	115	43.6	55	1	US-08-469-427A-3 Sequence 3, Appl1
27	115	43.6	55	2	US-08-609-443B-3 Sequence 3, Appl1

28	115	43.6	55	2	US-08-569-063C-3 Sequence 3, Appl1
29	115	43.6	188	1	US-08-469-427A-5 Sequence 5, Appl1
30	115	43.6	188	2	US-08-609-443B-5 Sequence 5, Appl1
31	115	43.6	188	2	US-08-569-063C-5 Sequence 5, Appl1
32	115	43.6	195	1	US-08-469-427A-7 Sequence 7, Appl1
33	115	43.6	195	2	US-08-609-443B-7 Sequence 7, Appl1
34	115	43.6	195	2	US-08-569-063C-7 Sequence 7, Appl1
35	105	39.8	18	3	US-08-807-992B-28 Sequence 28, Appl1
36	103	39.0	188	1	US-08-469-427A-11 Sequence 11, Appl1
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39	103	39.0	188	4	US-08-795-430-57 Sequence 57, Appl1
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41	79	29.9	350	2	US-08-999-811-4 Sequence 4, Appl1
42	79	29.9	350	2	US-08-824-996-2 Sequence 2, Appl1
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44	79	29.9	350	4	US-08-510-133A-33 Sequence 33, Appl1
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## ALIGNMENTS

RESULT 1  
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; Patent No. 5194596  
; APPLICANT: TISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDDES, JOHN  
; C. MITCHELL, RICHARD L.  
; TITLE OF INVENTION: PRODUCTION OF VASCULAR ENDOTHELIAL CELL  
; GROWTH FACTOR  
; NUMBER OF SEQUENCES: 32  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/07/450,883  
; FILING DATE: 14-DEC-1989  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 387,545  
; FILING DATE: 27-JUL-1989  
; SEQ ID NO:17:  
; LENGTH: 164  
5194596-17

Query Match 100.0%; Score 264; DB 6; Length 164;  
Best Local Similarity 100.0%; Pred. No. 1.2e-23;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPCSERRKHLFVQDPQTCCKSCNTDSRCKARQLEINERTCRC 45  
|||||  
Db 115 PCGPCSERRKHLFVQDPQTCCKSCNTDSRCKARQLEINERTCRC 159

RESULT 2  
5219739-17  
; Patent No. 5219739  
; APPLICANT: TISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDDES,  
; JOHN C.; MITCHELL, RICHARD L.  
; TITLE OF INVENTION: DNA SEQUENCES ENCODING BVEGF120 AND  
; HVEGF 121 AND METHODS FOR THE PRODUCTION OF BOVINE AND HUMAN  
; VASCULAR ENDOTHELIAL CELL GROWTH FACTORS, BVEGF120 AND HVEGF121  
; NUMBER OF SEQUENCES: 40  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/07/559,041  
; FILING DATE: 27-JUL-1990  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 450,883  
; FILING DATE: 14-DEC-1989  
; APPLICATION NUMBER: 387,545  
; FILING DATE: 27-JUL-1989  
; SEQ ID NO:17:  
; LENGTH: 164  
5219739-17

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Query Match          100.0%; Score 264; DB 6; Length 164;
Best Local Similarity 100.0%; Pred. No. 1.2e-23;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLELNERTCRC 45
DB 115 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLELNERTCRC 159

RESULT 3
5219739-18
Patent No. 5219739
APPLICANT: TISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDDES,
JOHN C.; MITCHELL, RICHARD L.
TITLE OF INVENTION: DNA SEQUENCES ENCODING BVGEF120 AND
BVGEF 121 AND METHODS FOR THE PRODUCTION OF BOVINE AND HUMAN
VASCULAR ENDOTHELIAL CELL GROWTH FACTORS, BVGEF120 AND BVGEF121
NUMBER OF SEQUENCES: 40
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/559,041
FILING DATE: 27-JUL-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 450,883
FILING DATE: 14-DEC-1989
APPLICATION NUMBER: 387,545
FILING DATE: 27-JUL-1989
SEQ ID NO: 18
LENGTH: 164
5219739-18

Query Match          100.0%; Score 264; DB 6; Length 164;
Best Local Similarity 100.0%; Pred. No. 1.2e-23;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLELNERTCRC 45
DB 115 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLELNERTCRC 159

RESULT 4
5194596-18
Patent No. 5194596
APPLICANT: TISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDDES, JOHN
C.; MITCHELL, RICHARD L.
TITLE OF INVENTION: PRODUCTION OF VASCULAR ENDOTHELIAL CELL
GROWTH FACTOR
NUMBER OF SEQUENCES: 32
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/450,883
FILING DATE: 14-DEC-1989
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 387,545
FILING DATE: 27-JUL-1989
SEQ ID NO: 18
LENGTH: 165
5194596-18

Query Match          100.0%; Score 264; DB 6; Length 165;
Best Local Similarity 100.0%; Pred. No. 1.2e-23;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLELNERTCRC 45
DB 116 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLELNERTCRC 160

RESULT 5
5219739-19
Patent No. 5219739
APPLICANT: TISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDDES,
JOHN C.; MITCHELL, RICHARD L.
TITLE OF INVENTION: DNA SEQUENCES ENCODING BVGEF120 AND
BVGEF 121 AND METHODS FOR THE PRODUCTION OF BOVINE AND HUMAN
VASCULAR ENDOTHELIAL CELL GROWTH FACTORS, BVGEF120 AND BVGEF121
NUMBER OF SEQUENCES: 40
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/559,041
FILING DATE: 27-JUL-1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 450,883
FILING DATE: 14-DEC-1989
APPLICATION NUMBER: 387,545
FILING DATE: 27-JUL-1989
SEQ ID NO: 19
LENGTH: 165
5219739-19

Query Match          100.0%; Score 264; DB 6; Length 165;
Best Local Similarity 100.0%; Pred. No. 1.2e-23;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLELNERTCRC 45
DB 116 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLELNERTCRC 160

RESULT 6
5332671-3
Patent No. 5332671
APPLICANT: FERRARA, NAPOLEONE; LEUNG, DAVID W. H.
TITLE OF INVENTION: PRODUCTION OF VASCULAR ENDOTHELIAL CELL
GROWTH FACTOR AND DNA ENCODING SAME
NUMBER OF SEQUENCES: 15
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/389,722
FILING DATE: 04-AUG-1989
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 369,424
FILING DATE: 21-JUN-1989
APPLICATION NUMBER: 351,117
FILING DATE: 12-MAY-1989
SEQ ID NO: 3
LENGTH: 190
5332671-3

Query Match          100.0%; Score 264; DB 6; Length 190;
Best Local Similarity 100.0%; Pred. No. 1.3e-23;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLELNERTCRC 45
DB 141 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLELNERTCRC 185

RESULT 7
US-08-567-200A-2
Sequence 2, Application US/08567200A
Patent No. 6020473
GENERAL INFORMATION:
APPLICANT: Keyt, Bruce A.
APPLICANT: Nguyen, Francis H.
TITLE OF INVENTION: Variants of Vascular Endothelial Cell
Growth Factor, Their Uses, and Processes for their
Production
NUMBER OF SEQUENCES: 42
CORRESPONDENCE ADDRESS:
ADDRESS: Fleury, Hohbach, Test, Albritton & Herbert
STREET: Four Embarcadero Center, Suite 3400
CITY: San Francisco
STATE: California
COUNTRY: United States
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ZIP: 94111-4187  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patentln Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/567,200A  
FILING DATE: 05-DEC-1995  
CLASSIFICATION: 435  
ATTORNEY/AGENT INFORMATION:  
NAME: Dreger, Walter H.  
REGISTRATION NUMBER: 24,190  
REFERENCE/DOCKET NUMBER: A-62326-1/WHD  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (415) 781-1989  
TELEFAX: (415) 398-3249  
TELEX: 910 277299  
INFORMATION FOR SEQ ID NO: 2:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 191 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-567-200A-2

Query Match 100.0%; Score 264; DB 3; Length 191;  
Best Local Similarity 100.0%; Pred. No. 1.3e-23;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 PCGCSERRKHLFVODPOTCKSCNKTDSRCKAROLEINERTCRC 45  
Db 142 PCGCSERRKHLFVODPOTCKSCNKTDSRCKAROLEINERTCRC 186

RESULT 8  
US-08-807-992B-2  
Sequence 2, Application US/08807992B  
Patent No. 6022541  
GENERAL INFORMATION:  
APPLICANT: Senger, Donald R  
APPLICANT: Dvorak, Harold F  
TITLE OF INVENTION: Immunological preparation for concurrent  
TITLE OF INVENTION: specific binding to spatially exposed regions of vascular  
TITLE OF INVENTION: permeability factor bound in-vivo to a tumor associated blood  
TITLE OF INVENTION: vessel  
NUMBER OF SEQUENCES: 31  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: David Prashker, Esq.  
STREET: P.O. Box 5387  
CITY: Magnolia  
STATE: Massachusetts  
COUNTRY: USA  
ZIP: 01930  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette, 3.50 inch, 1.40 Mb storage  
COMPUTER: IBM PS/1  
OPERATING SYSTEM: MS DOS  
SOFTWARE: WordPerfect version 5.1  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/807,992B  
FILING DATE: March 3, 1997  
CLASSIFICATION: 424  
ATTORNEY/AGENT INFORMATION:  
NAME: David Prashker, Esq.  
REGISTRATION NUMBER: 29,693  
REFERENCE/DOCKET NUMBER: BIS-033  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (978) 525-3794  
INFORMATION FOR SEQ ID NO: 2:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 191 amino acids

TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-08-807-992B-2

Query Match 100.0%; Score 264; DB 3; Length 191;  
Best Local Similarity 100.0%; Pred. No. 1.3e-23;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 PCGCSERRKHLFVODPOTCKSCNKTDSRCKAROLEINERTCRC 45  
Db 142 PCGCSERRKHLFVODPOTCKSCNKTDSRCKAROLEINERTCRC 186

RESULT 9  
US-08-691-794-2  
Sequence 2, Application US/08691794  
Patent No. 6057428  
GENERAL INFORMATION:

APPLICANT: Keyt, Bruce A.  
APPLICANT: Nguyen, Francis H.  
APPLICANT: Ferreira, Napoleone  
APPLICANT: Cunningham, Brian C.  
APPLICANT: Wells, James A.  
APPLICANT: Li, Bing  
TITLE OF INVENTION: Variants of Vascular Endothelial Cell  
TITLE OF INVENTION: Growth Factor, Their Uses, and Processes for their  
TITLE OF INVENTION: Production  
NUMBER OF SEQUENCES: 45  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Flehr, Hohbach, Test, Albritton & Herbert  
STREET: Four Embarcadero Center, Suite 3400  
CITY: San Francisco  
STATE: California  
COUNTRY: United States  
ZIP: 94111-4187

COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patentln Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/691,794  
FILING DATE: 02-AUG-1996  
CLASSIFICATION: 435  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 60/002,827  
FILING DATE: 25-AUG-1995  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 08/567,200  
FILING DATE: 05-DEC-1995  
ATTORNEY/AGENT INFORMATION:  
NAME: Dreger, Walter H.  
REGISTRATION NUMBER: 24,190  
REFERENCE/DOCKET NUMBER: A-63758/WHD  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (415) 781-1989  
TELEFAX: (415) 398-3249  
TELEX: 910 277299  
INFORMATION FOR SEQ ID NO: 2:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 191 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-691-794-2

Query Match 100.0%; Score 264; DB 3; Length 191;  
Best Local Similarity 100.0%; Pred. No. 1.3e-23;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPCSERRKHLEFVODPOTCKSCGKNTDSRCKAROLELNERTCRC 45  
DB 142 PCGPCSERRKHLEFVODPOTCKSCGKNTDSRCKAROLELNERTCRC 186

RESULT 10  
US-08-795-430-56  
Sequence 56, Application US/08795430  
Patent No. 6130071  
GENERAL INFORMATION:  
APPLICANT: Altalo, Karl  
APPLICANT: Joukov, Vladimir  
TITLE OF INVENTION: Vascular Endothelial Growth Factor C (VEGF-C)  
TITLE OF INVENTION: Protein and Gene, Mutants Thereof, and Uses Thereof  
NUMBER OF SEQUENCES: 57  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Marshall, O'Toole, Gerstein, Murray & Botun  
STREET: 6300 Sears Tower, 233 South Wacker Drive  
CITY: Chicago  
STATE: Illinois  
COUNTRY: United States of America  
ZIP: 60606-6402  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/795,430  
FILING DATE:  
CLASSIFICATION: 435  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: PCT/FR96/00427  
FILING DATE: 01-AUG-1996  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/671,573  
FILING DATE: 28-JUN-1996  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/601,132  
FILING DATE: 14-FEB-1996  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/585,895  
FILING DATE: 12-JAN-1996  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/510,133  
FILING DATE: 01-AUG-1995  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/340,011  
FILING DATE: 14-NOV-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Gass, David A.  
REGISTRATION NUMBER: 38,153  
REFERENCE/DOCKET NUMBER: 28967/33691  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 312/474-6300  
TELEFAX: 312/474-0448  
TELEX: 25-3856  
INFORMATION FOR SEQ ID NO: 56:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 191 amino acids  
TYPE: amino acid  
STRANDEDNESS: not relevant  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-795-430-56

Query Match 100.0%; Score 264; DB 4; Length 191;  
Best Local Similarity 100.0%; Pred. No. 1.3e-23;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
OY 1 PCGPCSERRKHLEFVODPOTCKSCGKNTDSRCKAROLELNERTCRC 45  
DB 142 PCGPCSERRKHLEFVODPOTCKSCGKNTDSRCKAROLELNERTCRC 186

DB 142 PCGPCSERRKHLEFVODPOTCKSCGKNTDSRCKAROLELNERTCRC 186  
RESULT 11  
5332671-4  
Patent No. 5332671  
APPLICANT: FERRARA, NAPOLEONE;LEUNG, DAVID W.H.  
TITLE OF INVENTION: PRODUCTION OF VASCULAR ENDOTHELIAL CELL  
GROWTH FACTOR AND DNA ENCODING SAME  
NUMBER OF SEQUENCES: 15  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/389,722  
FILING DATE: 04-AUG-1989  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 369,424  
FILING DATE: 21-JUN-1989  
APPLICATION NUMBER: 351,117  
FILING DATE: 12-MAY-1989  
SEQ ID NO:4:  
LENGTH: 191

Query Match 100.0%; Score 264; DB 6; Length 191;  
Best Local Similarity 100.0%; Pred. No. 1.3e-23;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPCSERRKHLEFVODPOTCKSCGKNTDSRCKAROLELNERTCRC 45  
DB 142 PCGPCSERRKHLEFVODPOTCKSCGKNTDSRCKAROLELNERTCRC 186

RESULT 12  
5240848-11  
Patent No. 5240848  
APPLICANT: KECK, PAMELA J.;CONNOLLY, DANIEL T.;FEDER, JOSEPH  
TITLE OF INVENTION: DNA SEQUENCES ENCODING HUMAN VASCULAR  
PERMEABILITY FACTOR HAVING 189 AMINO ACIDS  
NUMBER OF SEQUENCES: 11  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/337,037  
FILING DATE: 10-JUL-1989  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 274,061  
FILING DATE: 21-NOV-1988  
SEQ ID NO:11:  
LENGTH: 214  
5240848-11

Query Match 100.0%; Score 264; DB 6; Length 214;  
Best Local Similarity 100.0%; Pred. No. 1.5e-23;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPCSERRKHLEFVODPOTCKSCGKNTDSRCKAROLELNERTCRC 45  
DB 165 PCGPCSERRKHLEFVODPOTCKSCGKNTDSRCKAROLELNERTCRC 209

RESULT 13  
US-08-807-992B-3  
Sequence 3, Application US/08807992B  
Patent No. 6022541  
GENERAL INFORMATION:  
APPLICANT: Senger, Donald R  
APPLICANT: Dvorak, Harold F  
TITLE OF INVENTION: Immunological preparation for concurrent  
specific binding to spatially exposed regions of vascular  
permeability factor bound in-vivo to a tumor associated blo  
NUMBER OF SEQUENCES: 31  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: David Prashker, Esq.

STREET: P.O. Box 5387  
CITY: Magnolia  
STATE: Massachusetts  
COUNTRY: USA  
ZIP: 01930  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette, 3.50 inch, 1.40 Mb storage  
COMPUTER: IBM PS/1  
OPERATING SYSTEM: MS DOS  
SOFTWARE: Wordperfect version 5.1  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/807,992B  
FILING DATE: March 3, 1997  
CLASSIFICATION: 424  
ATTORNEY/AGENT INFORMATION:  
NAME: David Prashker, Esq.  
REGISTRATION NUMBER: 29,693  
REFERENCE/DOCKET NUMBER: BIS-033  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (978) 525-3794  
INFORMATION FOR SEQ ID NO: 3:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 215 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-08-807-992B-3

Query Match 100.0%; Score 264; DB 3; Length 215;  
Best Local Similarity 100.0%; Pred. No. 1.5e-23;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PCGPCSERRKHLFVDDPOTCKSCKNNTDSRCKARQLEINERTCRC 45  
|||||  
Db 166 PCGPCSERRKHLFVDDPOTCKSCKNNTDSRCKARQLEINERTCRC 210

RESULT 14  
US-08-586-039B-49  
Sequence 49; Application US/08586039B  
Patent No. 6140073  
GENERAL INFORMATION:  
APPLICANT: Bayne, Marvin L.  
APPLICANT: Thomas Jr., Kenneth A.  
TITLE OF INVENTION: VASCULAR ENDOTHELIAL CELL GROWTH FACTOR C  
TITLE OF INVENTION: SUBUNIT  
NUMBER OF SEQUENCES: 49  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Merck & Co., Inc.  
STREET: 126 E. Lincoln Avenue  
CITY: Rahway  
STATE: New Jersey  
COUNTRY: USA  
ZIP: 07065-0900  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Microsoft Word 6  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/586,039B  
FILING DATE: 16-JAN-1996  
CLASSIFICATION:  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/124,259  
FILING DATE: 20-SEP-1993  
APPLICATION NUMBER: 07/676,436  
FILING DATE: 28-MAR-1991  
ATTORNEY/AGENT INFORMATION:  
NAME: Hand, J. Mark  
REGISTRATION NUMBER: 36,545  
REFERENCE/DOCKET NUMBER: 18361DA

TELECOMMUNICATION INFORMATION:  
TELEPHONE: (908) 594-3905  
TELEFAX: (908) 594-4720  
INFORMATION FOR SEQ ID NO: 49:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 215 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-586-039B-49

Query Match 100.0%; Score 264; DB 4; Length 215;  
Best Local Similarity 100.0%; Pred. No. 1.5e-23;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PCGPCSERRKHLFVDDPOTCKSCKNNTDSRCKARQLEINERTCRC 45  
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Db 166 PCGPCSERRKHLFVDDPOTCKSCKNNTDSRCKARQLEINERTCRC 210

RESULT 15  
5219739-22  
Patent No. 5219739  
APPLICANT: FISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDDES,  
JOHN C.; MITCHELL, RICHARD L.  
TITLE OF INVENTION: DNA SEQUENCES ENCODING BVESF120 AND  
HVEGF 121 AND METHODS FOR THE PRODUCTION OF BOVINE AND HUMAN  
VASCULAR ENDOTHELIAL CELL GROWTH FACTORS, BVESF120 AND HVEGF121  
NUMBER OF SEQUENCES: 40  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/559,041  
FILING DATE: 27-JUL-1990  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 450,883  
FILING DATE: 14-DEC-1989  
APPLICATION NUMBER: 387,545  
FILING DATE: 27-JUL-1989  
SEQ ID NO: 22  
LENGTH: 215  
5219739-22

Query Match 100.0%; Score 264; DB 6; Length 215;  
Best Local Similarity 100.0%; Pred. No. 1.5e-23;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PCGPCSERRKHLFVDDPOTCKSCKNNTDSRCKARQLEINERTCRC 45  
|||||  
Db 166 PCGPCSERRKHLFVDDPOTCKSCKNNTDSRCKARQLEINERTCRC 210

Search completed: September 24, 2001, 16:13:37  
Job time: 33 sec

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GenCore version 4.5  
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OM protein - protein search, using sw model

Run on: September 24, 2001, 16:13:04 ; Search time 27.18 Seconds  
(without alignments)  
126.117 Million cell updates/sec

Title: US-09-579-420-1  
Perfect score: 264  
Sequence: 1 PCGPCSERKHLFVDDPQTC.....NTDSRCKARQLEINERTCRC 45

Scoring table: BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 219241 seqs, 76174552 residues

Total number of hits satisfying chosen parameters: 219241

Minimum DB seq length: 0  
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%  
Maximum Match 100%  
Listing first 45 summaries

Database :  
1: p1r1:\*  
2: p1r2:\*  
3: p1r3:\*  
4: p1r4:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	264	100.0	190	2 S52130	vascular endotheli
2	264	100.0	190	2 B40080	vascular endotheli
3	264	100.0	232	2 A41551	vascular endotheli
4	249	94.3	190	2 B44881	vascular endotheli
5	249	94.3	190	2 A35987	glioma-derived vas
6	249	94.3	214	2 A44881	vascular endotheli
7	115	43.6	188	2 JC4680	vascular endotheli
8	111	42.0	128	2 T51295	vascular endotheli
9	79	29.9	419	2 S69207	vascular endotheli
10	70.5	26.7	1187	2 T18355	hypothetical prote
11	68	25.8	1700	2 S08167	Balbiant ring 3 pr
12	65	24.6	1188	2 D86236	protein F14N23.5 f
13	64.5	24.4	3707	2 S18252	heparan sulfate pr
14	60	22.7	1808	2 T15099	hypothetical prote
15	59	22.3	160	2 JQ0542	165k secretory pro
16	59	22.3	220	2 S29185	antistatin - Hydra
17	58.5	22.2	810	2 D46260	plasmin (EC 3.4.21
18	58	22.0	83	2 D84697	hypothetical prote
19	58	22.0	3084	1 M4M5A	laminin alpha-1 ch
20	57.5	21.8	146	1 S34049	phospholipase A2 (
21	57.5	21.8	603	1 S28941	coagulation factor
22	57.5	21.8	4391	2 A38096	perlecan precursor
23	57	21.6	2195	2 T34264	hypothetical prote
24	56.5	21.4	145	2 T15608	hypothetical prote
25	56.5	21.4	202	2 T50635	hypothetical prote
26	56.5	21.4	469	2 C71373	probable oxalacet
27	56.5	21.4	477	2 T10093	nitrogenase (EC 1.
28	56.5	21.4	902	2 T01127	curly leaf protein
29	56.5	21.4	934	1 A34372	complement C6 prec

30	56	21.2	342	2 T16735	hypothetical prote
31	56	21.2	428	2 A55044	beta-4C-adrenergic
32	56	21.2	558	2 J05878	plasma hyaluronan
33	56	21.2	655	1 A46688	hepatocyte growth
34	56	21.2	899	2 D96594	unknown protein, 7
35	55.5	21.0	454	2 S16565	noli protein - Rhi
36	55.5	21.0	3106	1 S53868	laminin alpha-2 ch
37	55	20.8	166	2 E71907	hypothetical prote
38	55	20.8	317	2 T51204	hypothetical prote
39	55	20.8	348	2 T28623	hypothetical prote
40	55	20.8	349	2 D72175	G2R protein - Vari
41	55	20.8	449	2 D36858	gene G4R protein -
42	55	20.8	447	2 T21716	hypothetical prote
43	55	20.8	497	2 T06727	hypothetical prote
44	55	20.8	686	3 J07569	Delta-4 protein -
45	55	20.8	720	2 T02457	hypothetical prote

## ALIGNMENTS

```

RESULT 1
S52130
vascular endothelial growth factor - pig
C:Species: Sus scrofa domestica (domestic pig)
C:Date: 14-Jul-1995 #sequence_revision 21-Jul-1995 #text_change 05-Nov-1999
C:Accession: S52130
R:Sharma, H.S.; Tang, Z.H.; Cho, B.C.G.; Verdouw, P.D.
Biochim. Biophys. Acta 1260, 235-238, 1995
A:Title: Nucleotide sequence and expression of the porcine vascular endothelial growt
A:Reference number: S52130; MUID:95143284
A:Accession: S52130
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-190 <SHA>
A:Cross-references: GB:X81380; NID:9587559; PIDN:CAA57143.1; PID:9587560

Query Match 100.0%; Score 264; DB 2; Length 190;
Best Local Similarity 100.0%; Pred. No. 1.7e-21;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Oy 1 PCGPCSERKHLFVDDPQTCCKSCNKNTDSRCKARQLEINERTCRC 45
Db 141 PCGPCSERKHLFVDDPQTCCKSCNKNTDSRCKARQLEINERTCRC 185

RESULT 2
B40080
vascular endothelial growth factor precursor (version 2) - bovine
C:Species: Bos primigenius taurus (cattle)
C:Date: 30-Jun-1992 #sequence_revision 30-Jun-1992 #text_change 05-Nov-1999
C:Accession: B40080; B33787; A33255
R:Leung, D.W.; Cachianes, G.; Kuang, W.J.; Goeddel, D.V.; Ferrara, N.
Science 246, 1306-1309, 1989
A:Title: Vascular endothelial growth factor is a secreted angiogenic mitogen.
A:Reference number: A40080; MUID:96069608
A:Accession: B40080
A:Molecule type: mRNA
A:Residues: 1-190 <LEU>
A:Cross-references: GB:M32976; NID:9163006; PIDN:AAA30502.1; PID:9163007
R:Tischer, E.; Gospodarowicz, D.; Mitchell, R.; Silva, M.; Schilling, J.; Lau, K.; Cr
Biochem. Biophys. Res. Commun. 165, 1198-1206, 1989
A:Title: Vascular endothelial growth factor: a new member of the platelet-derived gro
A:Reference number: A33787; MUID:90121225
A:Accession: B33787
A:Molecule type: mRNA
A:Residues: 27-190 <RTS>
A:Cross-references: GB:M1836; NID:9163808; PIDN:AAA30804.1; PID:9163809
R:Ferrara, N.; Henzel, W.J.
Biochem. Biophys. Res. Commun. 161, 851-858, 1989
A:Title: Pituitary follicular cells secrete a novel heparin-binding growth factor spe
A:Reference number: A33255; MUID:89286596

```

A:Accession: A33255  
A:Molecule type: protein  
A:Residues: 27-31 <FER>  
C:Keywords: alternative splicing; glycoprotein  
F:1-26/Domain: signal sequence #status predicted <Stic>  
F:27-30/Product: vascular endothelial growth factor #status predicted <MAG>  
F:100/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 100.0%; Score 264; DB 2; Length 190;  
Best Local Similarity 100.0%; Pred. No. 1.7e-21;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGCEBRRKHLFVDPQPCCKSCKNTDSRCRKAOLELNERC 45  
DB 141 PCGCEBRRKHLFVDPQPCCKSCKNTDSRCRKAOLELNERC 185

RESULT 3  
A:Accession: A41551  
A:Molecule type: protein  
N:Alternate names: vascular permeability factor  
N:Contains: vascular endothelial growth factor 121 (VEGF 121); VEGF 165; VEGF 189; VEGF  
C:Species: Homo sapiens (man)  
C>Date: 28-Aug-1992 #sequence, revision 28-Aug-1992 #text, change 05-Nov-1999  
C:Accession: A41551; C41551; B41551; A40454; B40454; A40079; A40080; JQ1463; JQ1  
R:Housek, K.A.; Ferrara, N.; Winer, J.; Cachianes, G.; Li, B.; Leung, D.W.  
Mol. Endocrinol. 5, 1806-1814, 1991  
A:Title: The vascular endothelial growth factor family: identification of a fourth molec  
A:Reference number: A41551; MUID:92168017  
A:Accession: A41551  
A:Molecule type: mRNA  
A:Residues: 1-232 <HOU1>  
A:Cross-references: GB:M63972; NID:9246155; PID:9246156  
A:Accession: C41551  
A:Status: nucleic acid sequence not shown  
A:Molecule type: mRNA  
A:Residues: 1-140, 'N', 183-232 <HOU2>  
A:Accession: B41551  
A:Status: nucleic acid sequence not shown; not compared with conceptual translation  
A:Molecule type: mRNA  
A:Residues: 1-141, 227-232 <HOU>  
R:Titche, E.; Mitchell, T.; Hartman, T.; Silva, M.; Gospodarowicz, D.; Fiddes, J.C.; Ab  
J. Biol. Chem. 266, 11947-11954, 1991  
A:Title: The human gene for vascular endothelial growth factor. Multiple protein forms a  
A:Reference number: A40454; MUID:91268072  
A:Accession: A40454  
A:Molecule type: DNA  
A:Residues: 1-165, 183-232 <TII>  
A:Cross-references: GB:M63972; GB:M63973; GB:M63974; GB:M63975; GB:M63976; GB  
A:Accession: B40454  
A:Molecule type: DNA  
A:Residues: 1-140, 'N', 183-232 <TII>  
A:Cross-references: GB:M63971; GB:M63972; GB:M63973; GB:M63974; GB:M63975; GB:M63978  
R:Keck, P.J.; Hauser, S.D.; Krivi, G.; Sanzo, K.; Warren, T.; Feder, J.; Connolly, D.T.  
Science 246, 1309-1312, 1989  
A:Title: Vascular permeability factor, an endothelial cell mitogen related to PDGF.  
A:Reference number: A40079; MUID:90069609  
A:Accession: A40079  
A:Status: not compared with conceptual translation  
A:Molecule type: mRNA  
A:Residues: 1-165, 183-232 <KEC>  
A:Cross-references: GB:M27281; NID:9340300; PIDN:AAA36807.1; PID:9340301  
R:Leung, D.W.; Cachianes, G.; Kuang, W.-J.; Goeddel, D.V.; Ferrara, N.  
Science 246, 1306-1309, 1989  
A:Title: Vascular endothelial growth factor is a secreted angiogenic mitogen.  
A:Reference number: A40080; MUID:90069608  
A:Accession: A40080  
A:Status: not compared with conceptual translation

A:Molecule type: mRNA  
A:Residues: 1-140, 'N', 183-232 <LEU>  
A:Cross-references: GB:M32977; NID:9181970; PIDN:AAA35789.1; PID:9181971  
R:Weineld, K.; Marne, D.; Welch, H.A.  
Biochem. Biophys. Res. Commun. 183, 1167-1174, 1992  
A:Title: AIDS-associated Kaposi's sarcoma cells in culture express vascular endotheli  
A:Reference number: JQ1463; MUID:92231879  
A:Accession: JQ1463  
A:Molecule type: mRNA  
A:Residues: 1-140, 'N', 183-232 <MEI>  
A:Cross-references: EMBL:X62568; NID:937658; PIDN:CAA44447.1; PID:937659  
A:Experimental source: AIDS-Kaposi's sarcoma cell  
A:Accession: JQ1464  
A:Molecule type: mRNA  
A:Residues: 1-140, 'N', 227-232 <ME2>  
A:Experimental source: AIDS-Kaposi's sarcoma cell  
R:Connolly, D.T.; Olander, J.V.; Heuvelman, D.; Nelson, R.; Monsell, R.; Siegel, N.;  
J. Biol. Chem. 264, 20017-20024, 1989  
A:Title: Human vascular permeability factor. Isolation from U937 cells.  
A:Reference number: A34492; MUID:90062112  
A:Accession: A34492  
A:Molecule type: protein  
A:Residues: 27-36; 43-49, 'R', 72-76, 'Q', 78-81; 59-71 <CON>  
C:Comment: The most common of several alternatively spliced forms is VEGF 165.  
C:Genetics:  
A:Gene: GDB:VEGF  
A:Cross-references: GDB:132244; OMIM:192240  
A:Map position: 6p21-6p12  
C:Function:  
A:Description: promotes fluid and protein leakage from blood vessels  
C:Keywords: alternative splicing; angiogenesis; dimer; disulfide bond; extracellular  
F:1-232/Product: vascular endothelial growth factor 206 precursor #status predicted <  
F:1-165, 183-232/Product: vascular endothelial growth factor 189 precursor #status pre  
F:1-141, 227-232/Product: vascular endothelial growth factor 121 precursor #status pre  
F:1-26/Domain: signal sequence #status predicted <Stic>  
F:101/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 100.0%; Score 264; DB 2; Length 232;  
Best Local Similarity 100.0%; Pred. No. 2e-21;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGCEBRRKHLFVDPQPCCKSCKNTDSRCRKAOLELNERC 45  
DB 183 PCGCEBRRKHLFVDPQPCCKSCKNTDSRCRKAOLELNERC 227

RESULT 4  
A:Accession: B44881  
A:Molecule type: protein  
N:Alternate names: vascular endothelial growth factor-1 precursor - mouse  
C:Species: Mus musculus (house mouse)  
C>Date: 03-Feb-1994 #sequence, revision 03-Feb-1994 #text, change 05-Nov-1999  
C:Accession: B44881; A43351; A61029  
R:Breier, G.; Albrecht, U.; Stetter, S.; Risau, W.  
Development 114, 521-532, 1992  
A:Title: Expression of vascular endothelial growth factor during embryonic angiogenesis  
A:Reference number: A44881; MUID:92274860  
A:Accession: B44881  
A:Molecule type: mRNA  
A:Residues: 1-190 <BRE>  
A:Cross-references: GB:S38083; NID:9249858; PIDN:AA82253.1; PID:9249859  
A:Experimental source: embryo  
A:Note: sequence extracted from NCBI backbone (NCBIN:107622, NCBI:107623)  
R:Claffey, K.P.; Wilkison, W.O.; Spiegelman, B.M.  
J. Biol. Chem. 267, 16317-16322, 1992  
A:Title: Vascular endothelial growth factor. Regulation by cell differentiation and a  
A:Reference number: A43351; MUID:92355593  
A:Accession: A43351  
A:Molecule type: mRNA  
A:Residues: 1-116, 'ER', 119-190 <CIA>  
A:Cross-references: GB:M95200; NID:9202350; PIDN:AAA40547.1; PID:9202351  
A:Note: sequence extracted from NCBI backbone (NCBIN:110665, NCBI:110675)  
R:Rosenthal, R.A.; Megyesi, J.F.; Henzel, W.J.; Ferrara, N.; Folkman, J.

Growth Factors 4, 53-59, 1990  
A:Title: Conditioned medium from mouse sarcoma 180 cells contains vascular endothelial g  
A:Reference number: A61029; MUID:91197543  
A:Accession: A61029  
A:Molecule type: protein  
A:Residues: 27-38 <ROS>  
C:Keywords: alternative splicing; angiogenesis; dimer; disulfide bond; glycoprotein; mit

Query Match 94.3%; Score 249; DB 2; Length 190;  
Best Local Similarity 97.7%; Pred. No. 7.1e-20;  
Matches 43; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 2 CGPCSEKRLHFVDDPOTCKSCCKNTDSRCKAROLELNEPRTCRC 45  
DB 142 CEPSEKRLHFVDDPOTCKSCCKNTDSRCKAROLELNEPRTCRC 185

RESULT 5  
A35987  
glloma-derived vascular endothelial cell growth factor - rat  
C:Species: Rattus norvegicus (Norway rat)  
C>Date: 16-Nov-1990 #sequence\_revision 16-Nov-1990 #text\_change 05-Nov-1999  
C:Accession: A35987  
R:Conn, G.; Bayne, M.L.; Soderman, D.D.; Kwok, P.W.; Sullivan, K.A.; Palisi, T.M.; Hope,  
Proc. Natl. Acad. Sci. U.S.A. 87, 2628-2632, 1990  
A:Title: Amino acid and cDNA sequences of a vascular endothelial cell mitogen that is ho  
A:Reference number: A35987; MUID:90202249  
A:Accession: A35987  
A>Status: preliminary  
A:Molecule type: mRNA  
A:Residues: 1-190 <CON>  
A:Cross-references: GB:M32167; NID:g204287; PIDN:AAA41211.1; PID:g204288

Query Match 94.3%; Score 249; DB 2; Length 190;  
Best Local Similarity 97.7%; Pred. No. 7.1e-20;  
Matches 43; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 2 CGPCSEKRLHFVDDPOTCKSCCKNTDSRCKAROLELNEPRTCRC 45  
DB 142 CEPSEKRLHFVDDPOTCKSCCKNTDSRCKAROLELNEPRTCRC 185

RESULT 6  
A44881  
vascular endothelial growth factor-3 precursor - mouse  
N:Contans: vascular endothelial growth factor-2; vascular permeability factor  
C:Species: Mus musculus (house mouse)  
C>Date: 03-Feb-1994 #sequence\_revision 03-Feb-1994 #text\_change 08-Oct-1999  
C:Accession: A44881; C44881; A60932; S52136  
R:Breier, G.; Albrecht, U.; Sterrer, S.; Risau, W.  
Development 114, 521-532, 1992  
A:Title: Expression of vascular endothelial growth factor during embryonic angiogenesis  
A:Reference number: A44881; MUID:92274860  
A:Accession: A44881  
A:Molecule type: mRNA  
A:Residues: 1-214 <BRE>  
A:Cross-references: GB:S37052; NID:g249856; PIDN:AB22252.1; PID:g249857  
A:Experimental source: embryo  
A:Note: sequence extracted from NCBI backbone (NCBIN:104677, NCBI:P:104678)  
A:Accession: C44881  
A:Molecule type: mRNA  
A:Residues: 1-140, 209-214 <BR2>  
A:Cross-references: GB:S38100; NID:g249860; PIDN:AB22254.1; PID:g249861  
A:Note: sequence extracted from NCBI backbone (NCBIN:107624, NCBI:P:107625)  
R:Clausen, M.; Gerlach, M.; Gerlach, H.; Bretl, J.; Wang, F.; Familletti, P.C.; Pan, Y.C.  
J. Exp. Med. 172, 1535-1545, 1990  
A:Title: Vascular permeability factor: a tumor-derived polypeptide that induces endothe  
A:Reference number: A60932; MUID:91079755  
A:Accession: A60932  
A:Molecule type: protein  
A:Residues: 27-33 <CLA>

R:Sugihara, T.; Kaul, S.C.; Mitsui, Y.; Madhwa, R.  
Biochim. Biophys. Acta 1224, 365-370, 1994  
A:Title: Enhanced expression of multiple forms of VEGF is associated with spontaneous  
A:Reference number: S52136; MUID:95101726  
A:Accession: S52136  
A>Status: preliminary  
A:Molecule type: protein  
A:Residues: 27-46 <SUG>

C:Comment: Homodimers could be demonstrated for recombinant VEGF-2 but not VEGF-3.  
C:Keywords: alternative splicing; angiogenesis; disulfide bond; glycoprotein; homodim  
F:1-26/domain: signal sequence #status predicted <SIG>  
F:27-214/Product: vascular endothelial growth factor-3 #status experimental <MAT>

Query Match 94.3%; Score 249; DB 2; Length 214;  
Best Local Similarity 97.7%; Pred. No. 7.7e-20;  
Matches 43; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 2 CGPCSEKRLHFVDDPOTCKSCCKNTDSRCKAROLELNEPRTCRC 45  
DB 166 CEPSEKRLHFVDDPOTCKSCCKNTDSRCKAROLELNEPRTCRC 209

RESULT 7  
JC4680  
vascular endothelial growth factor-related factor 167 precursor - mouse  
N:Alternate names: VRF 167 protein  
C:Species: Mus musculus (house mouse)  
C>Date: 10-May-1996 #sequence\_revision 19-Jul-1996 #text\_change 05-Nov-1999  
C:Accession: JC4680  
R:Townson, S.; Lagercrantz, J.; Grimmond, S.; Sillins, G.; Nordenskjoeld, M.; Weber, G  
Biochem. Biophys. Res. Commun. 220, 922-928, 1996  
A:Title: Characterization of the murine VEGF-related factor gene.  
A:Reference number: JC4679; MUID:96183052  
A:Accession: JC4680  
A:Molecule type: mRNA  
A:Residues: 1-188 <TOW>  
A:Cross-references: GB:U43837; NID:g1314335; PIDN:AMC5253.1; PID:g1314336  
C:Comment: This factor is a mitogen, that is selective for endothelial cells, and bel  
ar endothelial growth factors 167 and VEGF 166.  
C:Genetics:  
A:Gene: vrf  
A:Map position: 19  
F:1-21/domain: signal sequence #status predicted <SIG>  
F:22-188/Product: vascular endothelial growth factor-related factor #status predicted

Query Match 43.6%; Score 115; DB 2; Length 188;  
Best Local Similarity 46.7%; Pred. No. 1.6e-05;  
Matches 21; Conservative 7; Mismatches 13; Indels 4; Gaps 2;

OY 2 CGPCSEKRLHFVDDPOTCKSCCKNTD-SRCKAROLELNEPRTCRC 45  
DB 142 CPPCQRROR--DPRPCRCRCRRRRFLHCGRLLELNEPRTCRC 183

RESULT 8  
I51295  
vascular endothelial growth factor - quail (fragment)  
C:Species: Phasianidae gen. sp. (quail)  
C>Date: 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change 28-Feb-1997  
C:Accession: I51295  
R:Flamme, I.; Breier, G.; Risau, W.  
Dev. Biol. 169, 699-712, 1995  
A:Title: Vascular endothelial growth factor (VEGF) and VEGF receptor 2 (flk-1) are ex  
A:Reference number: I51295; MUID:95301109  
A:Accession: I51295  
A>Status: preliminary; translated from GB/EMBL/DBJ  
A:Molecule type: DNA  
A:Residues: 1-128 <FLA>  
A:Cross-references: GB:S78343; NID:g999147; PID:g999148  
C:Genetics:

A:Gene: VEGF

Query Match 42.0%; Score 111; DB 2; Length 128;  
 Best Local Similarity 95.0%; Pred. No. 3.2e-05;  
 Matches 19; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 2 CGPSSRRKHLFVQDPQTCR 21  
 DB 109 CEGPSSRRKHLFVQDPQTCR 128

RESULT 9

S69207 vascular endothelial growth factor C precursor - human

N:Alternate names: FLT4 ligand DHM

C:Species: Homo sapiens (man)

C&gt;Date: 27-Apr-1996 #sequence\_revision 01-Nov-1996 #text\_change 08-Oct-1999

C:Accession: S69207; S61795; S71443; S69208; G02659

R:Joukov, V.; Pajusola, K.; Kaipainen, A.; Chliov, D.; Lahtinen, I.; Kuk, E.; Saksela, EMO J. 15, 1751, 1996

A:Title: Corrigendum: A novel vascular endothelial growth factor, VEGF-C, is a ligand for

A:Reference number: S69207; MID:96203094

A:Accession: S69207

A:Status: nucleic acid sequence not shown

A:Molecule type: mRNA

A:Residues: 1-419 &lt;JOU&gt;

A:Cross-references: EMBL:X94216; NID:g1177488; PIDN:CAA63907.1; PID:e221096; PID:g118200

A:Note: the nucleotide sequence was submitted to the EMBL Data Library, December 1995

A:Note: only a part of the translation is shown

R:Joukov, V.; Pajusola, K.; Kaipainen, A.; Chliov, D.; Lahtinen, I.; Kuk, E.; Saksela, EMO J. 15, 290-298, 1996

A:Title: A novel vascular endothelial growth factor, VEGF-C, is a ligand for the FLT4 (V

A:Reference number: S61795; MID:96178224

A:Accession: S61795

A:Status: nucleic acid sequence not shown; not compared with conceptual translation

A:Molecule type: mRNA

A:Residues: 70-419 &lt;JOU1&gt;

A:Note: this sequence has been revised in reference S69207

A:Accession: S71443

A:Molecule type: protein

A:Residues: 'X', 104-120 &lt;JOU2&gt;

R:Lee, J.; Gray, A.; Yuan, J.; Luoh, S.M.; Avraham, H.; Wood, W.I.

submitted to the EMBL Data Library, December 1995

A:Description: Vascular endothelial growth factor related protein (VRP): A ligand and sg

A:Reference number: S69208

A:Accession: S69208

A:Molecule type: mRNA

A:Residues: 1-419 &lt;LEP&gt;

A:Cross-references: EMBL:U43142; NID:g1150988; PIDN:AAA85214.1; PID:g1150989

R:Morris, J.C.

submitted to the EMBL Data Library, May 1996

A:Reference number: H01557

A:Accession: G02659

A:Status: preliminary; translated from GB/EMBL/DBJ

A:Molecule type: mRNA

A:Residues: 1-419 &lt;MOR&gt;

A:Cross-references: EMBL:U58111; NID:g1373426; PIDN:AA02909.1; PID:g1373427

C:Genetics:

A:Gene: GDB:VEGFC: VRP

A:Cross-references: GDB:3690883; OMIM:601528

F:1-13/Domain: signal sequence #status predicted &lt;Sig&gt;

F:13-102/Domain: propeptide #status predicted &lt;Pro&gt;

F:103-419/Product: vascular endothelial growth factor C #status experimental &lt;MAT&gt;

Query Match 29.9%; Score 79; DB 2; Length 419;

Best Local Similarity 39.1%; Pred. No. 0.2;

Matches 18; Conservative 6; Mismatches 12; Indels 10; Gaps 3;

OY 2 CGPSSRRKHLFVQDPQTCRCKNT--DSRCARQLELNERCRC 45

||| | :|:| ||| | :| :| :| :| :| :| :|

Db 304 CGPHKE-----LDRNSCQCVCKNKLFPSCQGANR-EFDENTCC 341

RESULT 10

T18355 hypothetical protein P3 - Mycoplasma hyorhinis

C:Species: Mycoplasma hyorhinis

C&gt;Date: 15-Oct-1999 #sequence\_revision 15-Oct-1999 #text\_change 07-Dec-1999

C:Accession: T18355

R:Deng, G.; McIntosh, M.A.

J. Bacteriol. 176, 5929-5937, 1994

A:Title: An amplifiable DNA region from the Mycoplasma hyorhinis genome.

A:Reference number: Z18688; MID:95014025

A:Accession: T18355

A:Status: preliminary; translated from GB/EMBL/DBJ

A:Molecule type: DNA

A:Residues: 1-1187 &lt;DEN&gt;

A:Cross-references: EMBL:L11447; NID:g150156; PID:g664956; PIDN:AAA62228.1

C:Genetics:

A:Genetic code: SGC3

Query Match 26.7%; Score 70.5; DB 2; Length 1187;

Best Local Similarity 33.3%; Pred. No. 3.4;

Matches 16; Conservative 4; Mismatches 21; Indels 7; Gaps 2;

OY 2 CG-----PCSSRRKHLFVQDPQTCRCKNTDSRCARQLELNERCRC 45

Db 372 CGQENATCSAQEHGCGQE---SCACPNTTCACTEHCCTESTGCC 416

||| | :|:| ||| | :| :| :| :| :| :| :|

RESULT 11

S08167 Balbiani ring 3 protein - midge (Chironomus tentans)

C:Species: Chironomus tentans

C&gt;Date: 30-Sep-1991 #sequence\_revision 30-Sep-1991 #text\_change 21-Jul-2000

C:Accession: S08167

R:Paulsson, G.; Lendahl, U.; Gall, J.; Ericsson, C.; Wieslander, L.

J. Mol. Biol. 211, 331-349, 1990

A:Title: The balbiani ring 3 gene in Chironomus tentans has a diverged repetitive str

A:Reference number: S08167; MID:90172404

A:Accession: S08167

A:Status: not compared with conceptual translation

A:Molecule type: DNA

A:Residues: 1-1700 &lt;PAU&gt;

A:Cross-references: GB:X5263; NID:g7057; PIDN:CAA36506.1; PID:g7058

C:Genetics:

A:Gene: BR3

A:Map position: 4

C:Superfamily: unassigned Balbiani ring proteins

Query Match 25.8%; Score 68; DB 2; Length 1700;

Best Local Similarity 31.2%; Pred. No. 8;

Matches 15; Conservative 10; Mismatches 15; Indels 8; Gaps 3;

OY 5 CSERRKHLFVQDPQ-----TCKSCCKNTDSR--CKARQLELNERCRC 45

Db 953 CKKQEMANCKSPRTWNYDTCCKVCCKNADSDCVKQIWLDDQ-CKC 999

||| | :|:| ||| | :| :| :| :| :| :| :|

RESULT 12

D86236 protein F14N23.5 [imported] - Arabidopsis thaliana

C:Species: Arabidopsis thaliana (mouse-ear cress)

C&gt;Date: 02-Mar-2001 #sequence\_revision 02-Mar-2001 #text\_change 31-Mar-2001

C:Accession: D86236

R:Theologis, A.; Ecker, J.R.; Palm, C.J.; Federspiel, N.A.; Kaul, S.; White, O.; Alonso, N.F.; Chung, M.K.; Connel, L.; Conway, A.B.; Conway, A.R.; Creasy, T.H.; Dewar,

Nansen, J.F.; Hughes, B.; Huizler, L.

Nature 408, 816-820, 2000

A:Authors: Hunter, J.L.; Jenkins, J.; Johnson-Hopson, C.; Khan, S.; Khaykin, E.; Kim,

C.A.; Li, J.H.; Li, Y.; Lin, X.; Liu, S.X.; Liu, Z.A.; Luros, J.S.; Maitl, R.; Marzla



Db 100 NDRVSC 106

Search completed: September 24, 2001, 16:15:01  
job time: 117 sec

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GenCore version 4.5  
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OM protein - protein search, using sw model

Run on: September 24, 2001, 16:13:04 ; Search time 45.8 Seconds  
(without alignments)  
129.994 Million cell updates/sec

Title: US-09-579-420-1  
Perfect score: 264  
Sequence: 1 PCGCSERRKHLFVQDPQTC.....NTDSRCKARQLELNERTCNC 45

Scoring table: BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 425026 seqs, 132305027 residues

Total number of hits satisfying chosen parameters: 425026

Minimum DB seq length: 0  
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%  
Maximum Match 100%  
Listing first 45 summaries

Database : SPTREMBL\_16:\*  
1: sp\_archaea:\*  
2: sp\_bacteria:\*  
3: sp\_fungi:\*  
4: sp\_human:\*  
5: sp\_invertebrate:\*  
6: sp\_mammal:\*  
7: sp\_mhc:\*  
8: sp\_organelle:\*  
9: sp\_phage:\*  
10: sp\_plant:\*  
11: sp\_rodent:\*  
12: sp\_unclassified:\*  
13: sp\_vertebrate:\*  
14: sp\_virus:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	264	100.0	102	6	09XT61 macaca fasc
2	264	100.0	190	6	077643 ovis aries
3	264	100.0	190	6	09XSP3 Ovisf3 canis fami
4	264	100.0	190	6	09GLE2 Ovisf2 canis fami
5	264	100.0	190	6	09GKR0 Ovisf0 equus cabal
6	264	100.0	208	6	09XSP4 Ovisf4 canis fami
7	264	100.0	209	6	060720 homo sapien
8	264	100.0	214	6	09XSP5 Ovisf5 canis fami
9	264	100.0	214	6	09MYV3 Omyv3 canis fami
10	264	100.0	232	4	09H1W9 Ohiw9 homo sapien
11	264	100.0	234	4	016889 Q16889 homo sapien
12	257	97.3	191	6	075875 O75875 homo sapien
13	255	96.6	123	6	09N1S1 O9n1s1 capreolus c
14	249	94.3	102	11	063672 ratu62 ratu62
15	249	94.3	142	11	09ERL6 O9erl6 mesocricetu
16	249	94.3	190	11	09OX39 O9ox39 spalax leuc
17	249	94.3	214	11	09QXG7 O9qxg7 xenopus lae
18	228	86.4	194	13	042572 O42572 xenopus lae
19	204	77.3	188	13	073682 O73682 brachydanto

20	193	73.1	174	4	09UL23 O9ul23 homo sapien
21	167.5	63.4	110	11	088911 O88911 rattus norv
22	139	52.7	124	6	09GK00 O9gk00 callithrix
23	108	40.9	188	6	09X548 O9x548 bos taurus
24	87	33.0	150	11	034881 O34881 rattus norv
25	77	29.2	420	6	09XS50 O9xs50 bos taurus
26	74.5	28.2	1704	5	094446 O94446 chironomus
27	71	26.9	1698	5	094438 O94438 chironomus
28	70.5	26.7	1187	2	049549 O49549 mycoplasma
29	66	25.0	1418	13	057352 O57352 cocurnix co
30	65	24.6	1188	10	09S159 O9s159 arabidopsis
31	63.5	24.1	315	13	09W6E0 O9w6e0 brachydanto
32	63.5	24.1	333	5	097139 O97139 dictyostell
33	63.5	24.1	403	5	09GPR6 O9gpr6 dictyostell
34	61.5	23.3	301	5	09VWP6 O9vwp6 dictyostell
35	61.5	23.3	747	10	09ICM8 O9icm8 oryza sativ
36	61	23.1	280	14	087009 O87009 subterranea
37	60	22.7	1808	5	044565 O44565 caenorhabdi
38	59.5	22.5	77	5	023771 O23771 chironomus
39	59.5	22.5	299	4	09H192 O9h192 homo sapien
40	59	22.3	829	11	09R1V7 O9r1v7 mus musculu
41	59	22.3	832	4	075077 O75077 homo sapien
42	58.5	22.2	896	10	09ZS22 O9zs22 glycine max
43	58	22.0	282	14	09Z0D4 O9z0d4 milk vetch
44	58	22.0	452	4	09NU63 O9nu63 homo sapien
45	58	22.0	1587	4	09Y6N6 O9y6n6 homo sapien

## ALIGNMENTS

RESULT	1	PRELIMINARY:	PRT:	102 AA.
09XT61	09XT61			
AC	09XT61:			
DT	01-NOV-1999 (TREMREL.12, Created)			
DT	01-NOV-1999 (TREMREL.12, Last sequence update)			
DT	01-OCT-2000 (TREMREL.15, Last annotation update)			
DE	VASCULAR ENDOTHELIAL GROWTH FACTOR (FRAGMENT).			
CN	VEGF.			
OS	Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey).			
OC	Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;			
OX	NCBI_TaxID=9541;			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RC	TISSUE=LUNG;			
RA	Kim I.K., Ryan A.M., Rohan R., Amano S., Aguilar S., Miller J.W.,			
RA	Adams A.P.;			
RT	"Constitutive expression of VEGF, VEGFR-1 and VEGFR-2 in normal			
RT	eyes.;"			
RL	Submitted (NOV-1998) to the EMBL/GenBank/DBJ databases.			
DR	EMBL; AF106942; AAD20589.1; -			
DR	HSSP; P15692; 2VPF.			
DR	InterPro; IPR000072; -			
DR	Pfam; PF00341; PDGF.1.			
FT	NOV-TER			
SO	SEQUENCE			
Query Match	100.0%; Score 264; DB 6; Length 102;			
Best Local Similarity	100.0%; Pred. NO.1.le-28;			
Matches	45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;			
QY	1 PCGCSERRKHLFVQDPQTCCKSCNTDSRCKARQLELNERTCNC 45			
DB	53 PCGCSERRKHLFVQDPQTCCKSCNTDSRCKARQLELNERTCNC 97			
RESULT	2			
077643	077643	PRELIMINARY:	PRT:	190 AA.

AC 07643:  
 DT 01-NOV-1998 (TREMblrel. 08, Created)  
 DT 01-NOV-1998 (TREMblrel. 08, Last sequence update)  
 DT 01-MAR-2001 (TREMblrel. 16, Last annotation update)  
 DE VASCULAR ENDOTHELIAL GROWTH FACTOR.  
 GN VEGF.  
 OS Ovis aries (Sheep).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;  
 OC Bovidae; Caprinae; Ovis.  
 ON NCBI\_TaxID=9940;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC STRAIN=COLUMBIA-RAMBOULIET;  
 RA Cheung C.Y., Brace R.A.;  
 RT "Ovine vascular endothelial growth factor: Nucleotide sequence and  
 expression in fetal tissues."  
 RL Growth Factors 0:0-0(1998).  
 DR EMBL: AF071015; AAC23608.1; -.  
 DR HSSP: P15692; IVGH.  
 DR InterPro: IPR000072; -.  
 DR Pfam: PF00341; PDGF; 1.  
 DR ProDom: PD001629; -; 1.  
 DR PROSITE: PS00249; PDGF\_1; 1.  
 DR PROSITE: PS00278; PDGF\_2; 1.  
 DR SMART: SM00141; PDGF; 1.  
 SQ SEQUENCE 190 AA; 22342 MW; 0D5E3B3E5C53E739 CRC64;

Query Match 100.0%; Score 264; DB 6; Length 190;  
 Best Local Similarity 100.0%; Pred. No. 1.9e-28;  
 Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPGSERRKHLFVDPQTCCKSKNTDSRCKAROLELNERC 45  
 DB 141 PCGPGSERRKHLFVDPQTCCKSKNTDSRCKAROLELNERC 185

RESULT 3  
 AC 09XSF3 PRELIMINARY; PRT; 190 AA.  
 DT 01-NOV-1999 (TREMblrel. 12, Created)  
 DT 01-NOV-1999 (TREMblrel. 12, Last sequence update)  
 DT 01-MAR-2001 (TREMblrel. 16, Last annotation update)  
 DE VASCULAR ENDOTHELIAL GROWTH FACTOR 164.  
 GN VEGF.  
 OS Canis familiaris (Dog).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.  
 ON NCBI\_TaxID=9615;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=HEART;  
 RA Jjingling L., Roque R.S.;  
 RT Submitted (MAR-1999) to the EMBL/Genbank/DBJ databases.  
 DR EMBL: AF133248; AAD29682.1; -.  
 DR HSSP: P15692; IVGH.  
 DR InterPro: IPR000072; -.  
 DR Pfam: PF00341; PDGF; 1.  
 DR ProDom: PD001629; -; 1.  
 DR PROSITE: PS00249; PDGF\_1; 1.  
 DR PROSITE: PS00278; PDGF\_2; 1.  
 DR SMART: SM00141; PDGF; 1.  
 SQ SEQUENCE 190 AA; 22292 MW; 2053500BC9085CE0 CRC64;

Query Match 100.0%; Score 264; DB 6; Length 190;  
 Best Local Similarity 100.0%; Pred. No. 1.9e-28;  
 Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 OY 1 PCGPGSERRKHLFVDPQTCCKSKNTDSRCKAROLELNERC 45  
 DB 141 PCGPGSERRKHLFVDPQTCCKSKNTDSRCKAROLELNERC 185

DB 141 PCGPGSERRKHLFVDPQTCCKSKNTDSRCKAROLELNERC 185

RESULT 4  
 AC 09GL52 PRELIMINARY; PRT; 190 AA.  
 DT 01-MAR-2001 (TREMblrel. 16, Created)  
 DT 01-MAR-2001 (TREMblrel. 16, Last sequence update)  
 DT 01-MAR-2001 (TREMblrel. 16, Last annotation update)  
 DE VASCULAR ENDOTHELIAL GROWTH FACTOR.  
 OS Sus scrofa (Pig).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Cetartiodactyla; Suina; Suidae; Sus.  
 ON NCBI\_TaxID=9823;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RA Lee T., Gantly J.M.;  
 RT "PCR cloning of porcine cardiac vascular endothelial growth factor  
 gene."  
 RL Submitted (NOV-2000) to the EMBL/Genbank/DBJ databases.  
 DR EMBL: AF318502; AAG33064.1; -.  
 SQ SEQUENCE 190 AA; 22338 MW; 10911FDC3C07417F CRC64;

Query Match 100.0%; Score 264; DB 6; Length 190;  
 Best Local Similarity 100.0%; Pred. No. 1.9e-28;  
 Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPGSERRKHLFVDPQTCCKSKNTDSRCKAROLELNERC 45  
 DB 141 PCGPGSERRKHLFVDPQTCCKSKNTDSRCKAROLELNERC 185

RESULT 5  
 AC 09GKR0 PRELIMINARY; PRT; 190 AA.  
 DT 01-MAR-2001 (TREMblrel. 16, Created)  
 DT 01-MAR-2001 (TREMblrel. 16, Last sequence update)  
 DT 01-MAR-2001 (TREMblrel. 16, Last annotation update)  
 DE VASCULAR ENDOTHELIAL GROWTH FACTOR 165.  
 OS Equus caballus (Horse).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Perissodactyla; Equidae; Equus.  
 ON NCBI\_TaxID=9796;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RA Miura N., Misumi K., Kawahara K., Nakashima M., Fukumitsu S.,  
 RA Kawabata H., Uto N., Oka T., Maruyama I., Sakamoto H.;  
 RT "Cloning of cDNA and High-Level Expression of Equine Vascular  
 Endothelial Growth Factor (VEGF)."  
 RL Submitted (JAN-2001) to the EMBL/Genbank/DBJ databases.  
 DR EMBL: AB053350; BAB20890.1; -.  
 SQ SEQUENCE 190 AA; 22312 MW; 87E9E161439E5F87 CRC64;

Query Match 100.0%; Score 264; DB 6; Length 190;  
 Best Local Similarity 100.0%; Pred. No. 1.9e-28;  
 Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPGSERRKHLFVDPQTCCKSKNTDSRCKAROLELNERC 45  
 DB 141 PCGPGSERRKHLFVDPQTCCKSKNTDSRCKAROLELNERC 185

RESULT 6  
 AC 09XSF4 PRELIMINARY; PRT; 208 AA.  
 DT 01-NOV-1999 (TREMblrel. 12, Created)  
 DT 01-NOV-1999 (TREMblrel. 12, Last sequence update)  
 DT 01-MAR-2001 (TREMblrel. 16, Last annotation update)



DE VASCULAR ENDOTHELIAL GROWTH FACTOR 182.  
GN VEGF.  
OS Canis familiaris (Dog).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
CC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.  
OX NCBI\_TaxID=9615;  
RN [1]  
RP SEQUENCE FROM N.A.  
RC TISSUE=HEART;  
RA Jjingling L., Roque R.S.;  
RL Submitted (MAR-1999) to the EMBL/GenBank/DBJ databases.  
DR EMBL; AF133249; AAD29683.1; -.  
DR HSSP; P15692; 2VPE.  
DR InterPro; IPR000072; -.  
DR Pfam; PF00341; PDGF\_1.  
DR ProDom; PD001629; -; 1.  
DR PROSITE; PS00249; PDGF\_1; 1.  
DR PROSITE; PS50278; PDGF\_2; 1.  
DR SMART; SM00141; PDGF; 1.  
SQ SEQUENCE 208 AA; 24400 MW; CF77AC591F5C2BBE CRC64;  
Query Match 100.0%; Score 264; DB 6; Length 208;  
Best Local Similarity 100.0%; Pred. No. 2e-28;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
OY 1 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLEINERTCRC 45  
Db 159 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLEINERTCRC 203  
RESULT 7  
ID 060720 PRELIMINARY; PRT; 209 AA.  
AC 060720;  
DT 01-AUG-1998 (TREMBLrel. 07, Created)  
DT 01-MAY-1999 (TREMBLrel. 10, Last sequence update)  
DT 01-MAR-2001 (TREMBLrel. 16, Last annotation update)  
DE VEGF183 PROTEIN PRECURSOR (VASCULAR ENDOTHELIAL GROWTH FACTOR 183)  
DE (DJ261G23.6.6) (VASCULAR ENDOTHELIAL GROWTH FACTOR).  
GN VEGF.  
OS Homo sapiens (Human).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
CC Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.  
OX NCBI\_TaxID=9606;  
RN [1]  
RP SEQUENCE FROM N.A.  
RC TISSUE-KIDNEY;  
RX MEDLINE=99096474; PubMed=9878851;  
RT Lei J., Jiang A., Pei D.;  
RT "Identification and characterization of a new splicing variant of  
RT vascular endothelial growth factor: VEGF183.";  
RL Blochum. Biophys. Acta, Gene Struct. Expr. 1443:400-406(1998).  
RN [2]  
RP SEQUENCE OF 114-209 FROM N.A.  
RC TISSUE=RETINA;  
RA Jjingling L., Roque R.S.;  
RL Submitted (MAY-1998) to the EMBL/GenBank/DBJ databases.  
RN [3]  
RP SEQUENCE FROM N.A.  
RA Williams S.;  
RL Submitted (DEC-2000) to the EMBL/GenBank/DBJ databases.  
DR EMBL; AJ010438; CAA09179.1; -.  
DR EMBL; AF062645; AAC16730.1; -.  
DR EMBL; AL136131; CAC19514.1; -.  
DR HSSP; P15692; 2VPE.  
DR InterPro; IPR000072; -.  
DR Pfam; PF00341; PDGF; 1.  
DR ProDom; PD001629; -; 1.  
DR PROSITE; PS00249; PDGF\_1; 1.  
DR PROSITE; PS50278; PDGF\_2; 1.  
DR SMART; SM00141; PDGF; 1.  
FT SIGNAL. 1 26 POTENTIAL.

FT CHAIN 27 209 VEGF183 PROTEIN.  
SQ SEQUENCE 209 AA; 24422 MW; F01CCEACD945D6CA CRC64;  
Query Match 100.0%; Score 264; DB 4; Length 209;  
Best Local Similarity 100.0%; Pred. No. 2e-28;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
OY 1 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLEINERTCRC 45  
Db 160 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLEINERTCRC 204  
RESULT 8  
ID 09XSF5 PRELIMINARY; PRT; 214 AA.  
AC 09XSF5;  
DT 01-NOV-1999 (TREMBLrel. 12, Created)  
DT 01-NOV-1999 (TREMBLrel. 12, Last sequence update)  
DT 01-MAR-2001 (TREMBLrel. 16, Last annotation update)  
DE VASCULAR ENDOTHELIAL GROWTH FACTOR 188.  
GN VEGF.  
OS Canis familiaris (Dog).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
CC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.  
OX NCBI\_TaxID=9615;  
RN [1]  
RP SEQUENCE FROM N.A.  
RC TISSUE=HEART;  
RA Jjingling L., Roque R.S.;  
RL Submitted (MAR-1999) to the EMBL/GenBank/DBJ databases.  
DR EMBL; AF133250; AAD29684.1; -.  
DR HSSP; P15692; 2VPE.  
DR InterPro; IPR000072; -.  
DR Pfam; PF00341; PDGF; 1.  
DR ProDom; PD001629; -; 1.  
DR PROSITE; PS00249; PDGF\_1; 1.  
DR PROSITE; PS50278; PDGF\_2; 1.  
DR SMART; SM00141; PDGF; 1.  
SQ SEQUENCE 214 AA; 25151 MW; 2269981AFBC60058 CRC64;  
Query Match 100.0%; Score 264; DB 6; Length 214;  
Best Local Similarity 100.0%; Pred. No. 2.1e-28;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
OY 1 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLEINERTCRC 45  
Db 165 PCGCSERRKHLFVDDPOTCKSCCKNTDSRCKAROLEINERTCRC 209  
RESULT 9  
ID 09MYV3 PRELIMINARY; PRT; 214 AA.  
AC 09MYV3;  
DT 01-OCT-2000 (TREMBLrel. 15, Created)  
DT 01-OCT-2000 (TREMBLrel. 15, Last sequence update)  
DT 01-MAR-2001 (TREMBLrel. 16, Last annotation update)  
DE VASCULAR ENDOTHELIAL GROWTH FACTOR 188 PRECURSOR.  
GN VEGF.  
OS Canis familiaris (Dog).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
CC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.  
OX NCBI\_TaxID=9615;  
RN [1]  
RP SEQUENCE FROM N.A.  
RX MEDLINE=20125516; PubMed=10661874;  
RX Scheidegger P., Weiglhofer W., Suarez S., Kaser-Holtz B., Steiner R.,  
RA Ballmer-Hofer K., Janssi R.;  
RT "Vascular endothelial growth factor (VEGF) and its receptors in tumor-  
bearing dogs.";  
RL Biol. Chem. 380:1449-1454(1999).  
DR EMBL; AJ133758; CAB82426.1; -.

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DR InterPro: IPR000072; -.
DR Pfam: PF00341; PDGF_1.
DR PROSITE: PS00249; PDGF_1; 1.
DR PROSITE: PS0278; PDGF_2; 1.
DR SMART: SM00141; PDGF; 1.
KM Signal.
FT CHAIN 1 26 POTENTIAL.
FT SIGNAL 27 214 VASCULAR ENDOTHELIAL GROWTH FACTOR 188.
SQ SEQUENCE 214 AA; 25175 MW; 0AC980A158C4AB27 CRC64;

Query Match
Best Local Similarity 100.0%; Score 264; DB 6; Length 214;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPCSERRKHFLFYDPOTCKSCSKNTDSRCKAROLELNERTCRC 45
DB 165 PCGPCSERRKHFLFYDPOTCKSCSKNTDSRCKAROLELNERTCRC 209

RESULT 10
O9H1W9 PRELIMINARY; PRT; 232 AA.
AC 09H1W9;
DT 01-MAR-2001 (TReMBLrel. 16, Created)
DT 01-MAR-2001 (TReMBLrel. 16, Last sequence update)
DT 01-MAR-2001 (TReMBLrel. 16, Last annotation update)
DE DJ26IG23.6.3 (VASCULAR ENDOTHELIAL GROWTH FACTOR).
GN VEGF.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.
OX NCBI_TaxID=9606;
RN (1)
RP SEQUENCE FROM N.A.
RA Williams S.;
RL Submitted (DEC-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL: AL136131; CAC19512.1; -.
SQ SEQUENCE 232 AA; 27042 MW; FB49F364446F4D01 CRC64;

Query Match
Best Local Similarity 100.0%; Score 264; DB 4; Length 232;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPCSERRKHFLFYDPOTCKSCSKNTDSRCKAROLELNERTCRC 45
DB 183 PCGPCSERRKHFLFYDPOTCKSCSKNTDSRCKAROLELNERTCRC 227

RESULT 11
ID 016889 PRELIMINARY; PRT; 254 AA.
AC 016889;
DT 01-NOV-1996 (TReMBLrel. 01, Created)
DT 01-NOV-1998 (TReMBLrel. 08, Last sequence update)
DT 01-MAR-2001 (TReMBLrel. 16, Last annotation update)
DE VASCULAR ENDOTHELIAL GROWTH FACTOR (FRAGMENT).
GN VEGF 206.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.
OX NCBI_TaxID=9606;
RN (1)
RP SEQUENCE FROM N.A.
RA MEDLINE-92168017; PubMed-1791831;
RA Houck K.A., Ferrara N., Winer J., Cachianes G., Li B., Leung D.W.;
RT "The vascular endothelial growth factor family: Identification of a
RT fourth molecular species and characterization of alternative splicing
RT of RNA."
RL MOL. Endocrinol. 5:1806-1814(1991).
DR EMBL: S85192; AAC63102.1; -.
DR EMBL: S85224; AAC63101.1; -.
DR
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DR EMBL: S85199; AAC63101.1; JOINED.
DR EMBL: S85201; AAC63101.1; JOINED.
DR EMBL: S85219; AAC63101.1; JOINED.
DR EMBL: S85222; AAC63101.1; JOINED.
DR HSSP: P15692; 2VPR.
DR InterPro: IPR000072; -.
DR Pfam: PF00341; PDGF; 1.
DR PROSITE: PS00249; PDGF_1; 1.
DR PROSITE: PS0278; PDGF_2; 1.
DR SMART: SM00141; PDGF; 1.
FT NON_TER 1
SQ SEQUENCE 254 AA; 29461 MW; 069DFE9B9723DBA8 CRC64;

Query Match
Best Local Similarity 100.0%; Score 264; DB 4; Length 254;
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPCSERRKHFLFYDPOTCKSCSKNTDSRCKAROLELNERTCRC 45
DB 205 PCGPCSERRKHFLFYDPOTCKSCSKNTDSRCKAROLELNERTCRC 249

RESULT 12
ID 075875 PRELIMINARY; PRT; 191 AA.
AC 075875;
DT 01-NOV-1998 (TReMBLrel. 08, Created)
DT 01-NOV-1998 (TReMBLrel. 08, Last sequence update)
DT 01-MAR-2001 (TReMBLrel. 16, Last annotation update)
DE VASCULAR ENDOTHELIAL GROWTH FACTOR.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.
OX NCBI_TaxID=9606;
RN (1)
RP SEQUENCE FROM N.A.
RA TISSUE-BREAST;
RC MEDLINE-98119755; PubMed-9450968;
RA Claffey K.P., Shih S.-C., Mullen A., Dziennis S., Cusick J.L.,
RA Abrams K.R., Lee S.W., Delmar M.;
RT "Identification of a human vpr/VEGF 3' untranslated region mediating
RT hypoxia-induced mRNA stability."
RL MOL. Biol. Cell 9:469-481(1998).
DR EMBL: AF022375; AAC63143.1; -.
DR HSSP: P15692; 1VPR.
DR InterPro: IPR000072; -.
DR Pfam: PF00341; PDGF; 1.
DR PRODOM: PD001629; -. 1.
DR PROSITE: PS0278; PDGF_2; 1.
DR SMART: SM00141; PDGF; 1.
SQ SEQUENCE 191 AA; 22320 MW; B5EA35838C72715B CRC64;

Query Match
Best Local Similarity 97.3%; Score 257; DB 4; Length 191;
Matches 44; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 1 PCGPCSERRKHFLFYDPOTCKSCSKNTDSRCKAROLELNERTCRC 45
DB 142 PCGPCSERRKHFLFYDPOTCKSCSKNTDSRCKAROLELNERTCRC 186

RESULT 13
ID 09N1S1 PRELIMINARY; PRT; 123 AA.
AC 09N1S1;
DT 01-OCT-2000 (TReMBLrel. 15, Created)
DT 01-OCT-2000 (TReMBLrel. 15, Last sequence update)
DT 01-MAR-2001 (TReMBLrel. 16, Last annotation update)
DE VASCULAR ENDOTHELIAL GROWTH FACTOR ISOFORM 165 (FRAGMENT).
GN VEGF.
OS Capreolus capreolus (Roe deer).
```

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OC Eukaryota; Metazoa; Chordata; Cranialata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervoidae;
OC Cervidae; Odocoileinae; Capreolus.
OX NCBI_TaxID=9858;
RN
RP SEQUENCE FROM N.A.
RC TISSUE=TESTIS;
RA Wadener A., Blotner S., Fickel J.;
RT "Detection of growth factors in the testes of roe deer (Capreolus
RL capreolus).";
RL Submitted (MAY-1999) to the EMBL/GenBank/DBJ databases.
DR EMBL; AF152594; AAF7333.1; -
DR InterPro; IPR000072; -
DR Pfam; PF00341; PDGF; 1.
DR Prodom; PD001629; -
DR PROSITE; PS00249; PDGF_1; 1.
DR PROSITE; PS50278; PDGF_2; 1.
DR SMART; SM00141; PDGF; 1.
FT NON_TER 1
FT NON_TER 123
SO SEQUENCE 123 AA; 14354 MW; 0A756F54105A4CE1 CRC64;

Query Match          96.6%; Score 255; DB 6; Length 123;
Best Local Similarity 100.0%; Pred. No. 2.2e-27;
Matches 44; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CGPCSERRKHLYVODPOTCKSCCKNTDSRCKAROLEINERTCR 44
Db 80 CGPCSERRKHLYVODPOTCKSCCKNTDSRCKAROLEINERTCR 123

RESULT 14
ID Q63672 PRELIMINARY; PRT; 102 AA.
AC Q63672; Q63882;
DT 01-NOV-1996 (TREMBLrel. 01, Created)
DT 01-NOV-1998 (TREMBLrel. 08, Last sequence update)
DT 01-OCT-2000 (TREMBLrel. 15, Last annotation update)
DE VASCULAR ENDOTHELIAL GROWTH FACTOR (VEGF188) (FRAGMENT).
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Cranialata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Rattus.
OX NCBI_TaxID=10116;
RN
RP SEQUENCE FROM N.A.
RC STRAIN=CD; TISSUE=LUNG;
RA Kim I., Ryan A., Rohan R., Aguilar S., Amano S., Brown L.F.,
RA Miller J., Adams A.P.;
RL Submitted (MAY-1998) to the EMBL/GenBank/DBJ databases.
RN
RP SEQUENCE OF 29-52 FROM N.A.
RC STRAIN=SPRAGUE-DAWLEY; TISSUE=BRAIN;
RA Yakovlev A.G., Faden A.I.;
RL Submitted (JUL-1993) to the EMBL/GenBank/DBJ databases.
RN
RP SEQUENCE OF 29-52 FROM N.A.
RC TISSUE=BRAIN;
RX MEDLINE=93343939; PubMed=8343163;
RA Ladoux A., Frelin C.;
RT "Expression of vascular endothelial growth factor by cultured
RL endothelial cells from brain microvessels.";
RL Biochem. Biophys. Res. Commun. 194:799-803(1993).
DR EMBL; AF062644; AAC16448.1; -
DR EMBL; L20913; AAA42334.1; -
DR EMBL; S64321; AAB27671.1; -
DR HSSP; P15692; 2VPE.
DR InterPro; IPR000072; -
DR Pfam; PF00341; PDGF; 1.
FT NON_TER 1
SO SEQUENCE 102 AA; 12163 MW; CDFC6A6914D07D2B CRC64;

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Query Match          94.3%; Score 249; DB 11; Length 102;
Best Local Similarity 97.7%; Pred. No. 1.3e-26;
Matches 43; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 CGPCSERRKHLYVODPOTCKSCCKNTDSRCKAROLEINERTCRC 45
Db 54 CGPCSERRKHLYVODPOTCKSCCKNTDSRCKAROLEINERTCRC 97

RESULT 15
ID Q9ERL6 PRELIMINARY; PRT; 142 AA.
AC Q9ERL6;
DT 01-MAR-2001 (TREMBLrel. 16, Created)
DT 01-MAR-2001 (TREMBLrel. 16, Last sequence update)
DT 01-MAR-2001 (TREMBLrel. 16, Last annotation update)
DE VASCULAR ENDOTHELIAL GROWTH FACTOR VEGF (FRAGMENT).
OS Mesocricetus auratus (Golden hamster).
OC Eukaryota; Metazoa; Chordata; Cranialata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;
OC Mesocricetus.
OX NCBI_TaxID=10036;
RN
RP SEQUENCE FROM N.A.
RA Ramesh G., Kondalah P., Seshagiri P.B.;
RT "Regulation of expression of transforming growth factor-beta's by
RT steroid hormone in the hamster uterus.";
RL Submitted (AUG-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AF297627; AAG16241.1; -
FT NON_TER 1
FT NON_TER 142
SO SEQUENCE 142 AA; 16621 MW; F7DA16D924E4E99E CRC64;

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Query Match          94.3%; Score 249; DB 11; Length 142;
Best Local Similarity 97.7%; Pred. No. 1.6e-26;
Matches 43; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 CGPCSERRKHLYVODPOTCKSCCKNTDSRCKAROLEINERTCRC 45
Db 98 CGPCSERRKHLYVODPOTCKSCCKNTDSRCKAROLEINERTCRC 141

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Search completed: September 24, 2001, 16:15:53  
 Job time: 169 sec

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GenCore version 4.5  
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OM protein - protein search, using sw model

Run on: September 24, 2001, 16:13:04 ; Search time 17.74 Seconds

(without alignments)  
86.894 Million cell updates/sec

Title: US-09-579-420-1

Perfect score: 264  
Sequence: 1 PCGPCSERKRLFYVDPQTC.....NTDSRCARQLEINERTCRC 45

Scoring table: BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 93435 seqs, 34255486 residues

Total number of hits satisfying chosen parameters: 93435

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%  
Maximum Match 100%  
Listing first 45 summaries

Database : SwissProt\_39:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	264	100.0	190	1	VEGF_BOVIN
2	264	100.0	190	1	VEGF_PIG
3	264	100.0	215	1	VEGF_HUMAN
4	261	98.9	164	1	VEGF_CAVPO
5	249	94.3	190	1	VEGF_RAT
6	249	94.3	214	1	VEGF_MOUSE
7	237	89.8	216	1	VEGF_CHICK
8	115	43.6	188	1	VEGF_MOUSE
9	103	39.0	188	1	VEGF_HUMAN
10	79	29.9	419	1	VEGC_HUMAN
11	74	28.0	415	1	VEGC_MOUSE
12	68	25.8	1700	1	BAR3_CHITE
13	64.5	24.4	3707	1	FGBM_MOUSE
14	64.5	24.4	4393	1	FGBM_HUMAN
15	59	22.3	220	1	ANTA_HYDMA
16	58.5	22.2	810	1	PLMN_ERIEU
17	58	22.0	83	1	IM10_ARATH
18	58	22.0	3084	1	LMAL_MOUSE
19	57.5	21.8	146	1	PA21_CAVPO
20	57.5	21.8	148	1	RNP_MICAV
21	57.5	21.8	603	1	FA12_CAVPO
22	56.5	21.4	477	1	NIFD_METMP
23	56.5	21.4	934	1	CO6_HUMAN
24	56	21.2	428	1	B4AR_MEGA
25	56	21.2	655	1	HGFA_HUMAN
26	55.5	21.0	454	1	NOL1_RHIME
27	55.5	21.0	3106	1	LM42_MOUSE
28	55	20.8	349	1	WC22_VARY
29	54	20.5	73	1	MT_DREPO
30	54	20.5	74	1	MTL_CAEBL
31	54	20.5	252	1	PG28_XENLA
32	53.5	20.3	62	1	MT2_CAEBL
33	53.5	20.3	483	1	NIFD_KLEPN

34	53.5	20.3	746	1	EZH2_HUMAN	015910 homo sapien
35	53.5	20.3	746	1	EZH2_MOUSE	061188 mus musculus
36	53.5	20.3	1639	1	LMG1_DROME	P15215 drosophila
37	53.5	20.3	1786	1	LMB1_MOUSE	P02463 mus musculus
38	53	20.1	62	1	MT_XENLA	005890 xenopus lae
39	53	20.1	63	1	MT_CHICK	P09576 gallus galli
40	53	20.1	66	1	MT3_RAT	P37361 rattus norv
41	53	20.1	68	1	MT3_MOUSE	P28184 mus musculus
42	53	20.1	118	1	PA2B_MICNI	P8166 micrurus ni
43	53	20.1	118	1	PA2B_MICNI	P8167 micrurus ni
44	53	20.1	2377	1	CCAG_HUMAN	043497 homo sapien
45	53	20.1	3635	1	LM45_MOUSE	061001 mus musculus

## ALIGNMENTS

```

RESULT 1
VEGF_BOVIN STANDARD; PRT; 190 AA.
ID VEGF_BOVIN
AC P15691:
DT 01-APR-1990 (Rel. 14, Created)
DT 01-APR-1990 (Rel. 14, Last sequence update)
DT 01-OCT-1996 (Rel. 34, Last annotation update)
DE VASCULAR ENDOTHELIAL GROWTH FACTOR PRECURSOR (VEGF) (VASCULAR
DE PERMEABILITY FACTOR) (VPF).
GN VEGF.
OS Bos taurus (Bovine).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC Bovidae; Bovinae; Bos.
OX NCBI_TaxID=9913;
[1]
SEQUENCE FROM N.A., AND SEQUENCE OF 27-47.
RP MEDLINE=90069608; PubMed=2479986;
RX Leung D.W., Cachianes G., Kuang W.-J., Goeddel D.V., Ferrara N.;
RA "Vascular endothelial growth factor is a secreted angiogenic
RT mitogen."
RL Science 246:1306-1309(1989).
RN [2]
SEQUENCE OF 27-190 FROM N.A.
RP MEDLINE=90121225; PubMed=2610687;
RX Fischer E., Gospodarowicz D., Mitchell R., Silva M., Schilling J.,
RA Lau K., Clisp T., Fiddes J.C., Abraham J.A.;
RT "Vascular endothelial growth factor: a new member of the platelet-
RL derived growth factor gene family."
RN Biochem. Biophys. Res. Commun. 165:1198-1206(1989).
RN [3]
SEQUENCE OF 27-31.
RP MEDLINE=89286596; PubMed=2735925;
RX Ferrara N., Henzel W.J.;
RA "Placental follicular cells secrete a novel heparin-binding growth
RT factor specific for vascular endothelial cells."
RL Biochem. Biophys. Res. Commun. 161:851-858(1989).
CC -I- FUNCTION: GROWTH FACTOR ACTIVE IN ANGIOGENESIS, AND ENDOTHELIAL
CC CELL GROWTH. INDUCES ENDOTHELIAL PROLIFERATION AND VASCULAR
CC PERMEABILITY.
CC -I- SUBUNIT: HOMODIMER, DISULFIDE-LINKED.
CC -I- SUBCELLULAR LOCATION: SECRETED BUT REMAINS ASSOCIATED TO CELLS OR
CC TO THE EXTRACELLULAR MATRIX UNLESS RELEASED BY HEPARIN (BY
CC SIMILARITY).
CC -I- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.
CC
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CC or send an email to license@isb-sib.ch).
CC
CC EMBL; M32976; AAA30502.1; -.
CC EMBL; M31836; AAA30804.1; -.

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DR EMBL: M33750; AAA30805.1; -  
DR PIR: A33255; A33255.  
DR PIR: A33787; A33787.  
DR PIR: B40080; B40080.  
DR HSSP: P15692; 2VGH.  
DR InterPro: IPR000072; -  
DR Pfam: PF00341; PDGF\_1; 1.  
DR PROSITE: PS00249; PDGF\_1; 1.  
DR PROSITE: PS50278; PDGF\_2; 1.  
KW Mitogen; Growth factor; Glycoprotein; Alternative splicing; Signal.  
FT SIGNAL 1 26  
FT CHAIN 27 190 VASCULAR ENDOTHELIAL GROWTH FACTOR.  
FT DISULFID 51 93 BY SIMILARITY.  
FT DISULFID 82 127 BY SIMILARITY.  
FT DISULFID 86 129 BY SIMILARITY.  
FT DISULFID 76 76 INTERCHAIN (BY SIMILARITY).  
FT DISULFID 85 85 INTERCHAIN (BY SIMILARITY).  
FT CARBOHYD 100 100 N-LINKED (GLCNAC...) (POTENTIAL).  
FT VARSPLIC 139 183 MISSING (IN ISOFORM BETA).  
FT VARSPLIC 184 184 R -> K (IN ISOFORM BETA).  
SQ SEQUENCE 190 AA; 22310 MW; EDBF903E46E24789 CRC64;

Query Match 100.0%; Score 264; DB 1; Length 190;  
Best Local Similarity 100.0%; Pred. No. 1.8e-24;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPGSERRKHFLVDPQTCCKSCKNTDSRCKAROLELNERTC RC 45  
DB 141 PCGPGSERRKHFLVDPQTCCKSCKNTDSRCKAROLELNERTC RC 185

RESULT 2  
VEGF\_PIG STANDARD; PRT; 190 AA.  
ID VEGF\_PIG  
AC P49151;  
DT 01-FEB-1996 (Rel. 33, Created)  
DT 01-FEB-1996 (Rel. 33, Last sequence update)  
DT 01-OCT-1996 (Rel. 34, Last annotation update)  
DE VASCULAR ENDOTHELIAL GROWTH FACTOR PRECURSOR (VEGF) (VASCULAR DE PERMEABILITY FACTOR) (VPF).  
GN VEGF.  
OS Sus scrofa (Pig).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Suina; Suidae; Sus.  
OX NCBI\_TaxID=9823;  
RN [1]  
RP SEQUENCE FROM N.A.  
RC TISSUE=Heart;  
RX MEDLINE=95143284; PubMed=7841203;  
RA Shatma H.S., Tang Z.H., Gho B.C.H., Verdouw P.D.;  
RT "Nucleotide sequence and expression of the porcine vascular endothelial growth factor.";  
RL Biochim. Biophys. Acta 1260:235-238(1995).  
CC -1- FUNCTION: GROWTH FACTOR ACTIVE IN ANGIOGENESIS AND ENDOTHELIAL CELL GROWTH. INDUCES ENDOTHELIAL PROLIFERATION AND VASCULAR PERMEABILITY (BY SIMILARITY).  
CC -1- SUBUNIT: HOMODIMER, DISULFIDE-LINKED (BY SIMILARITY).  
CC -1- SUBCELLULAR LOCATION: SECRETED BUT REMAINS ASSOCIATED TO CELLS OR TO THE EXTRACELLULAR MATRIX UNLESS RELEASED BY HEPARIN (BY SIMILARITY).  
CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.  
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CC EMBL: X81380; CAA57143.1; -  
CC HSSP: P15692; 2VGH.

DR InterPro: IPR000072; -  
DR Pfam: PF00341; PDGF\_1; 1.  
DR PROSITE: PS00249; PDGF\_1; 1.  
DR PROSITE: PS50278; PDGF\_2; 1.  
KW Mitogen; Growth factor; Glycoprotein; Signal.  
FT SIGNAL 1 26  
FT CHAIN 27 190 VASCULAR ENDOTHELIAL GROWTH FACTOR.  
FT DISULFID 51 93 BY SIMILARITY.  
FT DISULFID 82 127 BY SIMILARITY.  
FT DISULFID 86 129 BY SIMILARITY.  
FT DISULFID 76 76 INTERCHAIN (BY SIMILARITY).  
FT DISULFID 85 85 INTERCHAIN (BY SIMILARITY).  
FT CARBOHYD 100 100 N-LINKED (GLCNAC...) (POTENTIAL).  
SQ SEQUENCE 190 AA; 22368 MW; 04D408BD7913047F CRC64;

Query Match 100.0%; Score 264; DB 1; Length 190;  
Best Local Similarity 100.0%; Pred. No. 1.8e-24;  
Matches 45; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PCGPGSERRKHFLVDPQTCCKSCKNTDSRCKAROLELNERTC RC 45  
DB 141 PCGPGSERRKHFLVDPQTCCKSCKNTDSRCKAROLELNERTC RC 185

RESULT 3  
VEGF\_HUMAN STANDARD; PRT; 215 AA.  
ID VEGF\_HUMAN  
AC P15692;  
DT 01-APR-1990 (Rel. 14, Created)  
DT 01-APR-1990 (Rel. 14, Last sequence update)  
DT 15-JUL-1999 (Rel. 38, Last annotation update)  
DE VASCULAR ENDOTHELIAL GROWTH FACTOR PRECURSOR (VEGF) (VASCULAR DE PERMEABILITY FACTOR) (VPF).  
GN VEGF OR VEGFA.  
OS Homo sapiens (Human).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.  
OX NCBI\_TaxID=9606;  
RN [1]  
RP SEQUENCE FROM N.A.  
RX MEDLINE=90069608; PubMed=2479986;  
RA Leung D.W., Cachianes G., Kuang W.-J., Goeddel D.V., Ferrara N.;  
RT "Vascular endothelial growth factor is a secreted angiogenic mitogen.";  
RL Science 246:1306-1309(1989).  
CC -1- FUNCTION: GROWTH FACTOR. INDUCES ENDOTHELIAL CELL GROWTH AND VASCULAR PERMEABILITY (BY SIMILARITY).  
CC -1- SUBUNIT: HOMODIMER, DISULFIDE-LINKED (BY SIMILARITY).  
CC -1- SUBCELLULAR LOCATION: SECRETED BUT REMAINS ASSOCIATED TO CELLS OR TO THE EXTRACELLULAR MATRIX UNLESS RELEASED BY HEPARIN (BY SIMILARITY).  
CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.  
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CC EMBL: X81380; CAA57143.1; -  
CC HSSP: P15692; 2VGH.

RA Siegel N., Haymore B.L., Leimgruber R., Feder J.;  
 RT "Human vascular permeability factor. Isolation from U937 cells.";  
 RL J. Biol. Chem. 264:20017-20024(1989).  
 RN [6]  
 RP SEQUENCE OF 27-41.  
 RX MEDLINE=93145946; PubMed=7678805;  
 RA Flebich B.L., Jaeger B., Schoellmann C., Weindel K., Witting J.,  
 Koehs G., Marne D., Hug H., Welch H.A.;  
 RT "Synthesis and assembly of functionally active human vascular  
 endothelial growth factor homodimers in insect cells.";  
 RL Eur. J. Biochem. 211:19-26(1993).  
 RN [7]  
 RP X-RAY CRYSTALLOGRAPHY (2.5 ANGSTROMS) OF 34-135.  
 RX MEDLINE=97352774; PubMed=9207067;  
 RA Muller Y.A., Li B., Christinger H.W., Wells J.A., Cunningham B.C.,  
 de Vos A.M.;  
 RT "Vascular endothelial growth factor: crystal structure and functional  
 mapping of the kinase domain receptor binding site.";  
 RL Proc. Natl. Acad. Sci. U.S.A. 94:7192-7197(1997).  
 RN [8]  
 RP X-RAY CRYSTALLOGRAPHY (1.93 ANGSTROMS) OF 34-135.  
 RX MEDLINE=98035455; PubMed=9351807;  
 RA Muller Y.A., Christinger H.W., Keyt B.A., de Vos A.M.;  
 RT "The crystal structure of vascular endothelial growth factor (VEGF)  
 refined to 1.93-A resolution: multiple copy flexibility and receptor  
 binding.";  
 RL Structure 5:1325-1338(1997).  
 RN [9]  
 RP X-RAY CRYSTALLOGRAPHY (1.9 ANGSTROMS) OF 39-134.  
 RX MEDLINE=99119204; PubMed=9922142;  
 RA Wiesmann C., Christinger H.W., Cochran A.G., Cunningham B.C.,  
 Fairbrother W.J., Keenan C.J., Meng G., de Vos A.M.;  
 RT "Crystal structure of the complex between VEGF and a receptor-blocking  
 peptide.";  
 RL Biochemistry 37:17765-17772(1998).  
 RN [10]  
 RP STRUCTURE BY NMR OF 34-135.  
 RX MEDLINE=97477915; PubMed=9336848;  
 RA Fairbrother W.J., Champe M.A., Christinger H.W., Keyt B.A.,  
 Starovasnik M.A.;  
 RT "1H, 13C, and 15N backbone assignment and secondary structure of the  
 receptor-binding domain of vascular endothelial growth factor.";  
 RL Protein Sci. 6:2250-2260(1997).  
 RN [11]  
 RP STRUCTURE BY NMR OF 137-215.  
 RX MEDLINE=98298440; PubMed=9634701;  
 RA Fairbrother W.J., Champe M.A., Christinger H.W., Keyt B.A.,  
 Starovasnik M.A.;  
 RT "Solution structure of the heparin-binding domain of vascular  
 endothelial growth factor.";  
 RL Structure 6:637-648(1998).  
 CC -1- FUNCTION: GROWTH FACTOR ACTIVE IN ANGIOGENESIS, AND ENDOTHELIAL  
 CELL GROWTH. INDUCES ENDOTHELIAL PROLIFERATION AND VASCULAR  
 PERMEABILITY.  
 CC -1- SUBUNIT: HOMODIMER, DISULFIDE-LINKED.  
 CC -1- SUBCELLULAR LOCATION: SECRETED BUT REMAINS ASSOCIATED TO CELLS OR  
 TO THE EXTRACELLULAR MATRIX UNLESS RELEASED BY HEPARIN (BY  
 SIMILARITY).  
 CC -1- ALTERNATIVE PRODUCTS: FOUR FORMS OF VEGF ARE PRODUCED BY  
 ALTERNATIVE SPLICING OF THE SAME GENE (VEGF-121, VEGF-165,  
 VEGF-189 AND VEGF-215).  
 CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.  
 CC -----  
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 CC -----  
 CC EMBL; M32977; AAA35789.1; -;  
 CC EMBL; M27281; AAA36807.1; -;

DR EMBL; M63978; AAA36804.1; -;  
 DR EMBL; M63971; AAA36804.1; JOINED.  
 DR EMBL; M63972; AAA36804.1; JOINED.  
 DR EMBL; M63973; AAA36804.1; JOINED.  
 DR EMBL; M63974; AAA36804.1; JOINED.  
 DR EMBL; M63975; AAA36804.1; JOINED.  
 DR EMBL; M63976; AAA36804.1; JOINED.  
 DR EMBL; M63977; AAA36804.1; JOINED.  
 DR EMBL; X62568; CAA44447.1; -;  
 DR PIR; A34492; A34492.  
 DR PIR; A40079; A40079.  
 DR PIR; A40080; A40080.  
 DR PIR; A40454; A40454.  
 DR PIR; B40454; B40454.  
 DR PIR; C40454; C40454.  
 DR PIR; J01463; J01463.  
 DR PIR; J01464; J01464.  
 DR PIR; S17348; S17348.  
 DR PDB; 1VGH; 08-APR-98.  
 DR PDB; 2VGH; 08-APR-98.  
 DR PDB; 1VPE; 08-APR-98.  
 DR PDB; 2VPE; 29-JUL-98.  
 DR PDB; 1VPP; 23-FEB-99.  
 DR MIM; 192240; -;  
 DR InterPro; IPR000072; -;  
 DR Pfam; PF00341; PDGF\_1.  
 DR PROSITE; PS00249; PDGF\_1.  
 DR PROSITE; PSS0278; PDGF\_2; 1.  
 DR MitoGen; Growth factor; Glycoprotein; Alternative splicing; Signal;  
 KW 3D-structure.  
 FT SIGNAL 1 26  
 FT CHAIN 27 215 VASCULAR ENDOTHELIAL GROWTH FACTOR.  
 FT DISULFID 52 94  
 FT DISULFID 83 128  
 FT DISULFID 87 130  
 FT DISULFID 77 77 INTERCHAIN.  
 FT DISULFID 86 86 INTERCHAIN.  
 FT CARBOHYD 101 101 N-LINKED (GLCNAC. . .).  
 FT VARSPIC 141 141 K -> N (IN ISOFORM VEGF-121 AND ISOFORM  
 VEGF-165).  
 FT VARSPIC 142 165 MISSING (IN ISOFORM VEGF-165).  
 FT VARSPIC 142 209 MISSING (IN ISOFORM VEGF-121).  
 FT VARSPIC 142 209 MISSING (IN ISOFORM VEGF-121).  
 SQ SEQUENCE 215 AA; 25173 MW; 7B9759AD5871FF33 CRC64;  
 OY 1 PCGPCSERKHLFVODPOTCKSCCKNTDSRCKAROLELNEPTCNC 45  
 DB 166 PCGPCSERKHLFVODPOTCKSCCKNTDSRCKAROLELNEPTCNC 210  
 RESULT 4  
 VEGF\_CAVPO STANDARD; PRT; 164 AA.  
 ID VEGF\_CAVPO  
 AC P26617;  
 DT 01-AUG-1992 (Rel. 23, Created)  
 DT 01-AUG-1992 (Rel. 23, Last sequence update)  
 DT 01-OCT-1996 (Rel. 34, Last annotation update)  
 DE VASCULAR ENDOTHELIAL GROWTH FACTOR (VEGF) (VASCULAR PERMEABILITY  
 FACTOR) (VPE).  
 GN VEGF.  
 OS Cavia porcellus (Guinea pig).  
 OC Eukaryota; Metazoa; Chordata; Euteleostomi;  
 OC Mammalia; Eutheria; Rodentia; Hystriognathi; Caviidae; Cavia.  
 OX NCBI\_Taxid=10141;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RA Berse B.;  
 RL Submitted (XXX-1992) to the EMBL/GenBank/DBJ databases.  
 CC -1- FUNCTION: GROWTH FACTOR ACTIVE IN ANGIOGENESIS, AND ENDOTHELIAL

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CC CELL GROWTH. INDUCES ENDOTHELIAL PROLIFERATION AND VASCULAR
CC PERMEABILITY.
CC -1- SUBUNIT: HOMODIMER, DISULFIDE-LINKED.
CC -1- SUBCELLULAR LOCATION: SECRETED BUT REMAINS ASSOCIATED TO CELLS OR
CC TO THE EXTRACELLULAR MATRIX UNLESS RELEASED BY HEPARIN (BY
CC SIMILARITY).
CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.
CC -----
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CC -----
CC EMBL: M84230; AAA37057.1; -
CC HSSP: P15692; 2VGH.
CC InterPro: IPR000072; -.
CC Pfam: PF00341; PDGF_1; 1.
CC PROSITE: PS00249; PDGF_1; 1.
CC PROSITE: PS50278; PDGF_2; 1.
CC MitoGen; Growth factor; Glycoprotein.
CC FT DISULFID 25 67 BY SIMILARITY.
CC FT DISULFID 56 101 BY SIMILARITY.
CC FT DISULFID 60 103 BY SIMILARITY.
CC FT DISULFID 50 50 INTERCHAIN (BY SIMILARITY).
CC FT DISULFID 59 59 INTERCHAIN (BY SIMILARITY).
CC FT CARBOHYD 74 74 N-LINKED (GLCNAC... ) (POTENTIAL).
CC SEQUENCE 164 AA; 19330 MW; 9EB86A81A9D5DCA4 CRC64;

Query Match
Best Local Similarity 98.9%; Score 261; DB 1; Length 164;
Matches 44; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 1 PCGPCSERRKHLPVQDPQTCCKSCNTDSRCARQLELNERTCRC 45
DB 115 PCGPCSERRKHLPVQDPQTCCKSCNTDSRCARQLELNERTCRC 159

RESULT 5
VEGF_RAT STANDARD; PRT; 190 AA.
AC P16612;
DT 01-AUG-1990 (Rel. 15, Created)
DT 01-AUG-1990 (Rel. 15, Last sequence update)
DT 01-OCT-1996 (Rel. 34, Last annotation update)
DE VASCULAR ENDOTHELIAL GROWTH FACTOR PRECURSOR (VEGF) (VASCULAR
DE PERMEABILITY FACTOR) (VPF).
GN VEGF.
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX NCBI_TaxID=10116;
RN [1]
RP SEQUENCE FROM N.A., AND SEQUENCE OF 27-190.
RX MEDLINE=90207249; PubMed=2320579;
RA Conn G., Bayne M.L., Soderman D.D., Kwok P.W., Sullivan K.A.,
RA Palasi T.M., Hope D.A., Thomas K.A.;
RT "Amino acid and cDNA sequences of a vascular endothelial cell mitogen
RT that is homologous to platelet-derived growth factor."
RT Proc. Natl. Acad. Sci. U.S.A. 87:2628-2633(1990).
CC -1- FUNCTION: GROWTH FACTOR ACTIVE IN ANGIOGENESIS, AND ENDOTHELIAL
CC CELL GROWTH. INDUCES ENDOTHELIAL PROLIFERATION AND VASCULAR
CC PERMEABILITY.
CC -1- SUBUNIT: HOMODIMER, DISULFIDE-LINKED.
CC -1- SUBCELLULAR LOCATION: SECRETED BUT REMAINS ASSOCIATED TO CELLS OR
CC TO THE EXTRACELLULAR MATRIX UNLESS RELEASED BY HEPARIN (BY
CC SIMILARITY).
CC -1- TISSUE SPECIFICITY: EXPRESSED IN THE PITUITARY, IN BRAIN, IN
CC PARTICULARLY IN SUPRAOPTIC AND PARAVENTRICULAR NUCLEI AND THE
CC CHOROID PLEXUS. ALSO FOUND ABUNDANTLY IN THE CORPUS LUTEUM OF

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CC THE OVARY AND IN KIDNEY GLOMERULI.
CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.
CC -----
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CC -----
CC EMBL: M32167; AAA41211.1; -
CC PIR: A35987; A35987.
CC HSSP: P15692; 2VGH.
CC InterPro: IPR000072; -.
CC Pfam: PR00341; PDGF_1; 1.
CC PROSITE: PS00249; PDGF_1; 1.
CC PROSITE: PS50278; PDGF_2; 1.
CC MitoGen; Growth factor; Glycoprotein; Signal.
CC FT CHAIN 1 26 VASCULAR ENDOTHELIAL GROWTH FACTOR.
CC FT DISULFID 27 190 BY SIMILARITY.
CC FT DISULFID 51 93 BY SIMILARITY.
CC FT DISULFID 82 127 BY SIMILARITY.
CC FT DISULFID 86 129 BY SIMILARITY.
CC FT DISULFID 76 76 INTERCHAIN (BY SIMILARITY).
CC FT DISULFID 85 85 INTERCHAIN (BY SIMILARITY).
CC FT CARBOHYD 100 100 N-LINKED (GLCNAC... ).
CC SEQUENCE 190 AA; 22396 MW; 58937401041E377 CRC64;

Query Match
Best Local Similarity 94.3%; Score 249; DB 1; Length 190;
Matches 43; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 CGPCSERRKHLPVQDPQTCCKSCNTDSRCARQLELNERTCRC 45
DB 142 CGPCSERRKHLPVQDPQTCCKSCNTDSRCARQLELNERTCRC 185

RESULT 6
VEGF_MOUSE STANDARD; PRT; 214 AA.
AC Q00731;
DT 01-APR-1993 (Rel. 25, Created)
DT 01-OCT-1996 (Rel. 34, Last sequence update)
DT 01-OCT-2000 (Rel. 40, Last annotation update)
DE VASCULAR ENDOTHELIAL GROWTH FACTOR PRECURSOR (VEGF) (VASCULAR
DE PERMEABILITY FACTOR) (VPF).
GN VEGF.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=92274860; PubMed=1592003;
RA Breier G., Albrecht U., Sterrer S., Risau W.;
RT "Expression of vascular endothelial growth factor during embryonic
RT angiogenesis and endothelial cell differentiation."
RT Development 114:521-532(1992).
RN [2]
RP SEQUENCE FROM N.A. (VEGF-1).
RX MEDLINE=92355593; PubMed=1644816;
RA Claffey K.P., Wilkison W.O., Sliemers B.M.;
RT "Vascular endothelial growth factor. Regulation by cell
RT differentiation and activated second messenger pathways."
RT J. Biol. Chem. 267:16317-16322(1992).
RN [3]
RP SEQUENCE OF 1-3 FROM N.A.
RX MEDLINE=96216498; PubMed=8632007;
RA Shima D.T., Kuroki M., Deutsch U., Ng Y., Adams A.P., D'Amore P.A.;
RT "The mouse gene for vascular endothelial growth factor. Genomic
RT structure, definition of the transcriptional unit, and

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FT VARSPLIC 166 166 F -> L (IN ISOFORM VEGF-146).  
 SQ VARSPLIC 167 210 MISSING (IN ISOFORM VEGF-146).  
 FT SEQUENCE 216 AA: 25203 MW: 82669C2FE6C6DA7 CRC64:

Query Match 89.8%; Score 237; DB 1; Length 216;  
 Best Local Similarity 93.2%; Pred. No. 3e-21;

Matches 41; Conservative 1; Mismatches 2; Indels 0; Gaps 0;

Oy 2 CGPCSERRHLFVODPOTCKSCCKNTD-SRCKAROLELNERTCRC 45  
 Db 168 CERCSERRHLFVODPOTCKSCCKNTD-SRCKAROLELNERTCRC 211

RESULT 8  
 VEGF\_MOUSE STANDARD; PRT; 188 AA.  
 ID VEGF\_MOUSE  
 AC P49766;  
 DT 01-OCT-1996 (Rel. 34, Created)  
 DT 01-OCT-1996 (Rel. 34, Last sequence update)  
 DT 15-DEC-1998 (Rel. 37, Last annotation update)  
 DE VASCULAR ENDOTHELIAL GROWTH FACTOR B PRECURSOR (VEGF-B) (VASCULAR  
 DE ENDOTHELIAL GROWTH FACTOR RELATED PROTEIN) (VRF).  
 GN VEGFB OR VRF.  
 OS Mus musculus (Mouse).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.  
 OX NCBI\_TaxID=10090;  
 RN (1)  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=Heart;  
 RX MEDLINE=96197355; PubMed=8637916;  
 RA Olofsson B., Pajusola K., Kaipainen A., von Euler G., Joukov V.,  
 RA Sakela O., Orpana A., Petersson R.F., Allitalo K., Eriksson U.,  
 RT "Vascular endothelial growth factor B, a novel growth factor for  
 RT endothelial cells."  
 RT Proc. Natl. Acad. Sci. U.S.A. 93:2576-2581(1996).  
 RN (2)  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=Brain;  
 RX MEDLINE=96183052; PubMed=8607868;  
 RA Tomson S., Lagercrantz J., Grimond S., Sillins G.,  
 RA Nordenskjöld M., Weber G., Hayward N.K.,  
 RT "Characterization of the murine VEGF-related factor gene."  
 RT Biochem. Biophys. Res. Commun. 220:922-928(1996).  
 RL -1- FUNCTION: GROWTH FACTOR FOR ENDOTHELIAL CELLS. BINDS HEPARIN.  
 CC -1- SUBUNIT: HOMODIMER, DISULFIDE-LINKED. CAN ALSO FORM HETERODIMER  
 CC WITH VEGF.  
 CC -1- SUBCELLULAR LOCATION: SECRETED BUT REMAINS ASSOCIATED TO CELLS OR  
 CC TO THE EXTRACELLULAR MATRIX UNLESS RELEASED BY HEPARIN.  
 CC -1- TISSUE SPECIFICITY: ABUNDANTLY EXPRESSED IN HEART, BRAIN, KIDNEY  
 CC AND SKELETAL MUSCLE.  
 CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.  
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 CC -----  
 DR EMBL: U48800; AAB06273.1; -  
 DR EMBL: U48837; AAC52553.1; -  
 DR HSSP: P15692; 2VGH.  
 DR MGD: MGI:106199; Vegfb.  
 DR InterPro: IPR000072; -  
 DR Pfam: PF00341; PDGF\_1;  
 DR PROSITE: PS00249; PDGF\_1; 1.  
 DR PROSITE: PS50278; PDGF\_2; 1.  
 KM Mitogen; Growth factor; Signal; Heparin-binding.  
 FT SIGNAL 1 21 POTENTIAL.  
 FT CHAIN 22 188 VASCULAR ENDOTHELIAL GROWTH FACTOR B.

SQ SEQUENCE 188 AA: 21442 MW: D52A055FB995E9CA CRC64:

Query Match 43.6%; Score 115; DB 1; Length 188;  
 Best Local Similarity 46.7%; Pred. No. 5.8e-07;

Matches 21; Conservative 7; Mismatches 13; Indels 4; Gaps 2;

Oy 2 CGPCSERRHLFVODPOTCKSCCKNTD-SRCKAROLELNERTCRC 45  
 Db 142 CPGCTGROR---PDPTRCRRCRRRRFLHCGRGELNPDTCRC 183

RESULT 9  
 VEGF\_HUMAN STANDARD; PRT; 188 AA.  
 ID VEGF\_HUMAN  
 AC P49765;  
 DT 01-OCT-1996 (Rel. 34, Created)  
 DT 01-OCT-1996 (Rel. 34, Last sequence update)  
 DT 01-OCT-2000 (Rel. 40, Last annotation update)  
 DE VASCULAR ENDOTHELIAL GROWTH FACTOR B PRECURSOR (VEGF-B) (VEGF RELATED  
 DE FACTOR).  
 GN VEGFB OR VRF.  
 OS Homo sapiens (Human).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.  
 OX NCBI\_TaxID=9606;  
 RN (1)  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE=96197355; PubMed=8637916;  
 RA Olofsson B., Pajusola K., Kaipainen A., von Euler G., Joukov V.,  
 RA Sakela O., Orpana A., Petersson R.F., Allitalo K., Eriksson U.,  
 RT "Vascular endothelial growth factor B, a novel growth factor for  
 RT endothelial cells."  
 RT Proc. Natl. Acad. Sci. U.S.A. 93:2576-2581(1996).  
 RN (2)  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE=97077124; PubMed=8919691;  
 RA Grimond S., Lagercrantz J., Drinkwater C., Sillins G., Tomson S.,  
 RA Pollock P., Gotley D., Carson E., Rakar S., Nordenskjöld M., Ward L.,  
 RA Hayward N., Weber G.,  
 RT "Cloning and characterization of a novel human gene related to  
 RT vascular endothelial growth factor."  
 RL Genome Res. 6:124-131(1996).  
 CC -1- FUNCTION: GROWTH FACTOR FOR ENDOTHELIAL CELLS. BINDS HEPARIN.  
 CC -1- SUBUNIT: HOMODIMER, DISULFIDE-LINKED. CAN ALSO FORM HETERODIMER  
 CC WITH VEGF.  
 CC -1- SUBCELLULAR LOCATION: SECRETED BUT REMAINS ASSOCIATED TO CELLS OR  
 CC TO THE EXTRACELLULAR MATRIX UNLESS RELEASED BY HEPARIN.  
 CC -1- TISSUE SPECIFICITY: EXPRESSED IN ALL TISSUES EXCEPT LIVER.  
 CC HIGHEST LEVELS FOUND IN HEART, SKELETAL MUSCLE AND PANCREAS.  
 CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.  
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 CC -----  
 DR EMBL: U48801; AAB06274.1; -  
 DR EMBL: U43369; AAB91463.1; -  
 DR HSSP: P15692; 1VPF.  
 DR MIM: 601398; -  
 DR InterPro: IPR000072; -  
 DR Pfam: PF00341; PDGF\_1;  
 DR PROSITE: PS00249; PDGF\_1; 1.  
 DR PROSITE: PS50278; PDGF\_2; 1.  
 KM Mitogen; Growth factor; Signal; Heparin-binding.  
 FT SIGNAL 1 21 POTENTIAL.  
 FT CHAIN 22 188 VASCULAR ENDOTHELIAL GROWTH FACTOR B.  
 FT SEQUENCE 188 AA: 21261 MW: F0465AD5A372194 CRC64:



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CC -----  
DR EMBL; U73620; AAC52984.1; -.  
DR EMBL; U58112; AAB46707.1; -.  
DR HSSP; P15692; IVPF.  
DR MGD; MG1:109124; Vegfc.  
DR InterPro; IPRO00072; -.  
DR InterPro; IPRO02400; -.  
DR Pfam; PF00341; PDGF_1  
DR PRINTS; PR00438; GRCYSKNOT.  
DR PROSITE; PS00249; PDGF_1; 1.  
DR PROSITE; PS50278; PDGF_2; 1.  
KW Mitogen; Growth factor; Glycoprotein; Signal; Repeat.  
FT SIGNAL 1 ?  
FT PROPEP 1 ?  
FT CHAIN 99 415  
FT DOMAIN 271 361  
FT REPEAT 271 294  
FT REPEAT 295 318  
FT REPEAT 319 342  
FT REPEAT 343 361  
FT CARBOHYD 171 171  
FT CARBOHYD 201 201  
FT CARBOHYD 236 236  
SQ SEQUENCE 415 AA; 46471 MW;  
D9D3DD3CCEC659D6 CRC64;
```

Query Match	28.0%	Score 74	DB 1	Length 415
Best Local Similarity	37.0%	Pred No. 0.075		
Matches 17	Conservative 6	Mismatches 13	Indels 10	Gaps 3
QY	2	CGCGSERRKHLFVDDPOTKCKSCKNT--DSRCARQLELNERTCRC	45	
bb	300	CGPHKE-----LDRDSCQCGCKRKLTPNCSGAGR--PFEDNTCCQ	337	

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RESULT 12
BAR3_CHITE
ID BAR3_CHITE STANDARD: PRI: 1700 AA.
AC Q03376;
DT 01-OCT-1993 (Rel. 27, Created)
DT 01-OCT-1993 (Rel. 27, Last sequence update)
DT 01-OCT-1994 (Rel. 30, Last annotation update)
DE BALBIANI RING PROTEIN 3 PRECURSOR.
GN BR3
OS Chironomus tentans (Midge).
OC Eukaryota; Metazoa; Arthropoda; Tracheata; Hexapoda; Insecta;
OC Pterygota; Neleptera; Endopterygota; Diptera; Nematocera;
OC Chironomidae; Chironomidae; Chironominae; Chironomus.
OX NCBI_TaxID=7153;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Salivary gland;
RX MEDLINE=90172404; PubMed=1689777;
RA- Paulsson G., Iendahl U., Gali J., Ericsson C., Wieslander L.;
RT "The Balbiani ring 3 gene in Chironomus tentans has a diverged
RT repetitive structure split by many introns. ";
RL J. Mol. Biol. 211:331-349(1990).
CC -1- FUNCTION: USED BY THE LARVAE TO CONSTRUCT A SUPRAMOLECULAR
CC STRUCTURE, THE LARVAL TUBE. BALBIANI RING PROTEIN 3 COULD PLAY A
CC ROLE AS A TRANSPORT PROTEIN THAT BINDS TO OTHER PROTEINS
CC INTRACELLULARLY AND IN THE GLAND LUMEN IN ORDER TO PREVENT THESE
CC FROM FORMING WATER-INSOLUBLE FIBERS TOO EARLY.
CC -1- SUBCELLULAR LOCATION: SECRETED.
CC -1- TISSUE SPECIFICITY: SALIVARY GLAND.
CC -1- DOMAIN: HAS 82 APPROXIMATE REPEATS OF CYS-X-CYS-X-CYS.
CC -----
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CC -----  
DR EMBL; X52263; CAA36506.1; -.  
DR PIR; S08167; S08167.  
DR HSSP; P18055; ZMRB.  
DR InterPro; IPR000853; -.  
DR PRINTS; PR00876; MTMEMATODE.  
KW Repeat; signal.  
FT SIGNAL 1 ?  
FT CHAIN ? 1700 POTENTIAL.  
SQ SEQUENCE 1700 AA; 186145 MW; 34202B28521B0815 CRC64;

	Query Match	25.8%;	Score 68;	DB 1;	Length 1700;
Dd	Best Local Similarity	31.2%;	Pred. No.	1.3;	
Matches	15; Conservative	10; Mismatches	15; Indels	8; Gaps	3;
Oy	5 CSEKKHLEFVDDPQ-----TKCSCKNTDSR--CARALEINERTCRC	45			
	: :: :		:	: :	: :
Dd	953 CKNKEMANCKSPRTWNYDTCTKCYCKNADSDDCVKPKPIWLDDQ-CKC	999			

RESULT	13
ID	PGBM_MOUSE
STANDARD:	PRT: 3707 AA.
AC	005793;
DT	01-NOV-1995 (Rel. 32, Created)
DT	01-NOV-1995 (Rel. 32, Last sequence update)
DT	15-JUL-1999 (Rel. 38, Last annotation update)
DE	BASEMENT MEMBRANE-SPECIFIC HEPARAN SULFATE
DE	PROTEIN PRECURSOR (HSPC) (PERLECAN) (PLC).
GN	HSPG2..
OS	Mus musculus (Mouse).
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC	Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX	NCBI_TaxID=10090;
RN	[1]
RP	SEQUENCE FROM N.A.
RC	TISSUE=Melanoma;
RX	NEOLINE=92078133; PubMed=1744087;
RA	Noonan D.M., Horigan E.A., Valente P., Cai S., Horigan E., Sasaki M.,
RA	Yanada Y., Hassell J.R.;
RT	"The complete sequence of perlecan, a basement membrane heparan
RT	sulfate proteoglycan, reveals extensive similarity with laminin A
RT	chain, low density lipoprotein-receptor, and the neural cell adhesion
RT	molecule.";
RL	J. Biol. Chem. 266:22939-22947(1991).
RL	[2]
RN	SEQUENCE OF 940-1601 AND 1870-2600 FROM N.A., AND PARTIAL SEQUENCE.
RP	MEDLINE=89034110; PubMed=2972708;
RX	SEDLINE=89034110; PubMed=2972708;
RA	Noonan D.M., Horigan E.A., Ledbetter S.R., Vogeli G., Sasaki M.,
RA	Yanada Y., Hassell J.R.;
RT	"Identification of cDNA clones encoding different domains of the
RT	basement membrane heparan sulfate proteoglycan.";
RT	J. Biol. Chem. 263:16379-16387(1988).
RL	-1- FUNCTION: THIS PROTEIN IS AN INTEGRAL COMPONENT OF BASEMENT
CC	MEMBRANES. IT IS RESPONSIBLE FOR THE FIXED NEGATIVE ELECTROSTATIC
CC	CHARGE AND IS INVOLVED IN THE CHARGE-SELECTIVE ULTRAFILTRATION
CC	PROPERTIES. IT INTERACTS WITH OTHER BASEMENT MEMBRANE COMPONENTS
CC	SUCH AS LAMININ AND COLLAGEN TYPE IV AND SERVES AS AN ATTACHMENT
CC	SUBSTRATE FOR CELLS.
CC	-1- SUBUNIT: PURIFIED PERLECAN HAS A STRONG TENDENCY TO AGGREGATE IN
CC	DIMERS OR SKELETON STRUCTURES.
CC	-1- SUBCELLULAR LOCATION: EXTRACELLULAR.
CC	-1- TISSUE SPECIFICITY: FOUND IN THE BASEMENT MEMBRANES.
CC	-1- PM: CONTAINS THREE HEPARAN SULFATE CHAINS AS WELL AS N-LINKED
CC	AND O-LINKED OLIGOSACCHARIDES.
CC	-1- SIMILARITY: CONTAINS 4 LDL-RECEPTOR CLASS A DOMAINS.
CC	-1- SIMILARITY: CONTAINS 10.5 LAMININ EGF-LIKE DOMAINS.
CC	-1- SIMILARITY: CONTAINS 3 LAMININ DOMAINS.
CC	-1- SIMILARITY: CONTAINS 15 IMMUNOGLOBULIN-LIKE C2-TYPE DOMAINS.
CC	-1- SIMILARITY: CONTAINS 2 LAMININ G-LIKE DOMAINS.

CC	-1 SIMILARITY: CONTAINS 2 EGF-LIKE DOMAINS.
CC	-----
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CC	
DR	EMBL; M77174; AAA39911.1; -
DR	EMBL; J04054; AAA39899.1; -
DR	HSSP; J04055; AAA39912.1; -
DR	HSSP; P01130; IAUJ.
DR	MGI; MG1:96257; Hsp92.
DR	InterPro; IPRO00034; -
DR	InterPro; IPRO00082; -
DR	InterPro; IPRO00561; -
DR	InterPro; IPRO01438; -
DR	InterPro; IPRO01791; -
DR	InterPro; IPRO02049; -
DR	InterPro; IPRO02172; -
DR	InterPro; IPRO03006; -
DR	pfam; PF01390; SEA; 1.
DR	pfam; PF00047; Ig; 15.
DR	pfam; PF00052; laminin_B; 3.
DR	pfam; PF00053; laminin_Egf; 8.
DR	pfam; PF00054; laminin_G; 3.
DR	Pfam; PF00057; Idl_recept_a; 4.
DR	PRINTS; PR00010; EGFBLOOD
DR	PROSITE; PS00022; EGF_1; 8.
DR	PROSITE; PS01186; EGF_2; 5.
DR	PROSITE; PS01209; LDLRA_1; 4.
DR	PROSITE; PS01248; LAMININ_TYPE_EGF; 11.
DR	PROSITE; PS50068; LDLRA_2; 4.
KW	Signal; Basement membrane; Proteoglycan; Repeat; Glycoprotein;
KW	Heparan sulfate; Laminin EGF-like domain; Immunoglobulin domain;
KW	Extracellular matrix; EGF-like domain.
FT	SIGNAL 1 21 POTENTIAL.
FT	CHAIN 22 3707 BASEMENT MEMBRANE-SPECIFIC HEPARAN SULFATE PROTEOGLYCAN CORE PROTEIN.
FT	DOMAIN 22 193 DOMAIN I (UNIQUE, CONTAINS 3 HS SIDE CHAINS).
FT	DOMAIN 194 403 DOMAIN II (4 LDLRA REPEATS).
FT	DOMAIN 404 504 DOMAIN IIA (1 IGG-REPEAT).
FT	DOMAIN 507 1676 DOMAIN III (SIMILAR TO SHORT ARM OF LAMININ A CHAIN).
FT	DOMAIN 1677 2980 DOMAIN IV (SIMILAR TO NEURAL CELL ADHESION MOLECULE; 14 IGG REPEATS).
FT	DOMAIN 2981 3707 DOMAIN V (C-TERMINAL G-DOMAIN OF LAMININ ALPHA CHAINS AND EGF).
FT	DOMAIN 194 234 LDL-RECEPTOR CLASS A 1.
FT	DOMAIN 281 319 LDL-RECEPTOR CLASS A 2.
FT	DOMAIN 320 359 LDL-RECEPTOR CLASS A 3.
FT	DOMAIN 360 403 LDL-RECEPTOR CLASS A 4.
FT	DOMAIN 404 504 IGG-LIKE C2-TYPE DOMAIN 1.
FT	DOMAIN 521 530 LAMININ EGF-LIKE 1 (N-TERMINAL).
FT	DOMAIN 531 730 LAMININ EGF-LIKE 1 (N-TERMINAL).
FT	DOMAIN 731 763 LAMININ EGF-LIKE 1 (C-TERMINAL).
FT	DOMAIN 764 813 LAMININ EGF-LIKE 2.
FT	DOMAIN 814 871 LAMININ EGF-LIKE 3.
FT	DOMAIN 879 923 LAMININ EGF-LIKE 4 (INCOMPLETE).
FT	DOMAIN 924 933 LAMININ EGF-LIKE 5 (N-TERMINAL).
FT	DOMAIN 934 1125 LAMININ EGF-LIKE 2 (DOMAIN III B).
FT	DOMAIN 1126 1158 LAMININ EGF-LIKE 5 (C-TERMINAL).
FT	DOMAIN 1159 1208 LAMININ EGF-LIKE 6.
FT	DOMAIN 1209 1265 LAMININ EGF-LIKE 7.
FT	DOMAIN 1275 1324 LAMININ EGF-LIKE 8.
FT	DOMAIN 1325 1334 LAMININ EGF-LIKE 9 (N-TERMINAL).
FT	DOMAIN 1335 1529 LAMININ EGF-LIKE 9 (C-TERMINAL).
FT	DOMAIN 1530 1562 LAMININ EGF-LIKE 9 (C-TERMINAL).
FT	DOMAIN 1563 1612 LAMININ EGF-LIKE 10.
FT	DOMAIN 1613 1670 LAMININ EGF-LIKE 11.

FT	DOMAIN	1677	1771	IG-LIKE C2-TYPE DOMAIN 2.
FT	DOMAIN	1772	1865	IG-LIKE C2-TYPE DOMAIN 3.
FT	DOMAIN	1866	1954	IG-LIKE C2-TYPE DOMAIN 4.
FT	DOMAIN	1955	2049	IG-LIKE C2-TYPE DOMAIN 5.
FT	DOMAIN	2050	2148	IG-LIKE C2-TYPE DOMAIN 6.
FT	DOMAIN	2149	2244	IG-LIKE C2-TYPE DOMAIN 7.
FT	DOMAIN	2245	2343	IG-LIKE C2-TYPE DOMAIN 8.
FT	DOMAIN	2344	2436	IG-LIKE C2-TYPE DOMAIN 9.
FT	DOMAIN	2437	2532	IG-LIKE C2-TYPE DOMAIN 10.
FT	DOMAIN	2533	2619	IG-LIKE C2-TYPE DOMAIN 11.
FT	DOMAIN	2620	2720	IG-LIKE C2-TYPE DOMAIN 12.
FT	DOMAIN	2721	2809	IG-LIKE C2-TYPE DOMAIN 13.
FT	DOMAIN	2810	2895	IG-LIKE C2-TYPE DOMAIN 14.
FT	DOMAIN	2896	2980	IG-LIKE C2-TYPE DOMAIN 15.
FT	DOMAIN	2981	3130	LAMININ G-LIKE 1 (GLOBULAR DOMAIN V A)
FT	DOMAIN	3049	3241	EGF-LIKE 2.
FT	DOMAIN	3304	3495	LAMININ G-LIKE 2 (GLOBULAR DOMAIN V B)
FT	DOMAIN	3558	3705	HEPARAN SULFATE (POTENTIAL).
FT	SITE	65	67	HEPARAN SULFATE (POTENTIAL).
FT	SITE	71	73	HEPARAN SULFATE (POTENTIAL).
FT	SITE	76	78	HEPARAN SULFATE (POTENTIAL).
FT	SITE	3615	3617	MEDIATES MOTOR NEURON ATTACHMENT (POTENTIAL).
FT	DISULFID	199	212	BY SIMILARITY.
FT	DISULFID	206	225	BY SIMILARITY.
FT	DISULFID	219	234	BY SIMILARITY.
FT	DISULFID	285	297	BY SIMILARITY.
FT	DISULFID	292	310	BY SIMILARITY.
FT	DISULFID	304	319	BY SIMILARITY.
FT	DISULFID	325	337	BY SIMILARITY.
FT	DISULFID	332	350	BY SIMILARITY.
FT	DISULFID	344	359	BY SIMILARITY.
FT	DISULFID	368	381	BY SIMILARITY.
FT	DISULFID	375	394	BY SIMILARITY.
FT	DISULFID	388	403	BY SIMILARITY.
FT	DISULFID	428	479	BY SIMILARITY.
FT	DISULFID	764	773	BY SIMILARITY.
FT	DISULFID	766	780	BY SIMILARITY.
FT	DISULFID	783	792	BY SIMILARITY.
FT	DISULFID	795	811	BY SIMILARITY.
FT	DISULFID	814	829	BY SIMILARITY.
FT	DISULFID	816	839	BY SIMILARITY.
FT	DISULFID	842	851	BY SIMILARITY.
FT	DISULFID	854	869	BY SIMILARITY.
FT	DISULFID	1159	1168	BY SIMILARITY.
FT	DISULFID	1161	1175	BY SIMILARITY.
FT	DISULFID	1178	1187	BY SIMILARITY.
FT	DISULFID	1190	1206	BY SIMILARITY.
FT	DISULFID	1209	1224	BY SIMILARITY.
FT	DISULFID	1211	1234	BY SIMILARITY.
FT	DISULFID	1237	1246	BY SIMILARITY.
FT	DISULFID	1249	1263	BY SIMILARITY.
FT	DISULFID	1275	1287	BY SIMILARITY.
FT	DISULFID	1277	1293	BY SIMILARITY.
FT	DISULFID	1295	1302	BY SIMILARITY.
FT	DISULFID	1307	1322	BY SIMILARITY.
FT	DISULFID	1563	1572	BY SIMILARITY.
FT	DISULFID	1565	1579	BY SIMILARITY.
FT	DISULFID	1582	1591	BY SIMILARITY.
FT	DISULFID	1594	1610	BY SIMILARITY.
FT	DISULFID	1613	1628	BY SIMILARITY.
FT	DISULFID	1615	1638	BY SIMILARITY.
FT	DISULFID	1641	1650	BY SIMILARITY.
FT	DISULFID	1653	1668	BY SIMILARITY.
FT	DISULFID	1792	1839	BY SIMILARITY.
FT	DISULFID	1886	1932	BY SIMILARITY.
FT	DISULFID	1976	2021	BY SIMILARITY.
FT	DISULFID	2073	2118	BY SIMILARITY.
FT	DISULFID	2170	2215	BY SIMILARITY.
FT	DISULFID	2268	2313	BY SIMILARITY.
FT	DISULFID	2365	2413	BY SIMILARITY.
FT	DISULFID	2456	2506	BY SIMILARITY.
FT	DISULFID	2554	2599	BY SIMILARITY.

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FT DISULFID 2641 2686 BY SIMILARITY.
FT DISULFID 2831 2876 BY SIMILARITY.
FT DISULFID 2917 2962 BY SIMILARITY.
FT CARBOHYD 65 65 O-LINKED (GLYCOSAMINOGLYCAN) (POTENTIAL).
FT CARBOHYD 71 71 O-LINKED (GLYCOSAMINOGLYCAN) (POTENTIAL).
FT CARBOHYD 76 76 O-LINKED (GLYCOSAMINOGLYCAN) (POTENTIAL).

Query Match 24.4% Score 64.5; DB 1; Length 3707;
Best Local Similarity 36.4%; Pred. No. 6.4;
Matches 12; Conservative 4; Mismatches 16; Indels 1; Gaps 1;

OY 2 CGPGRKRLFLVQDPQTC-KSCKNFDSRCKA 33
DB 903 CNECDGSHLKNQNDGCLKCFKMGVSRCSS 935

RESULT 14
PCBM_HUMAN STANDARD; PRT; 4393 AA.
AC P98160; Q16287;
DT 01-OCT-1996 (Rel. 34, Created)
DT 01-OCT-1996 (Rel. 34, Last sequence update)
DT 01-OCT-2000 (Rel. 40, Last annotation update)
DE BASEMENT MEMBRANE-SPECIFIC HEPARAN SULFATE PROTEOGLYCAN CORE
DE PROTEIN PRECURSOR (HSPG) (PERLECAN) (PLC).
GN HSPG2.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.
OX NCBI_TaxID=9606;

RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE-92112994; PubMed-1730768;
RA Kallunki P., Tryggvason K.;
RT "Human basement membrane heparan sulfate proteoglycan core protein: a
RT 467-kD protein containing multiple domains resembling elements of the
RT low density lipoprotein receptor, laminin, neural cell adhesion
RT molecules, and epidermal growth factor."
RL J. Cell Biol. 116:559-571(1992).
RN [2]
RP SEQUENCE FROM N.A.
RX TISSUE-Skin, and Colon;
RC MEDLINE-92235084; PubMed-1569102;
RA Murdoch A.D., Dodge G.R., Cohen I., Tuan R.S., Iozzo R.V.;
RT "Primary structure of the human heparan sulfate proteoglycan from
RT basement membrane (HSPG2/perlecan). A chimeric molecule with multiple
RT domains homologous to the low density lipoprotein receptor, laminin,
RT neural cell adhesion molecules, and epidermal growth factor."
RL J. Biol. Chem. 267:8544-8557(1992).
RN [3]
RP SEQUENCE OF 1018-1472 FROM N.A.
RX TISSUE-Colon;
RC MEDLINE-91365376; PubMed-1679749;
RA Dodge G.R., Kovalszky I., Chu M.L., Hassell J.R., McBride O.W.,
RA Yi H.F., Iozzo R.V.;
RT "Heparan sulfate proteoglycan of human colon: partial molecular
RT cloning, cellular expression, and mapping of the gene (HSPG2) to the
RT short arm of human chromosome 1."
RL Genomics 10:673-680(1991).
RN [4]
RP SEQUENCE OF 892-1398 FROM N.A.
RX TISSUE-Fibroblastoma;
RC MEDLINE-92120660; PubMed-1685141;
RA Kallunki P., Eddy R.L., Byers M.G., Kestila M., Shows T.B.,
RA Tryggvason K.;
RT "Cloning of human heparan sulfate proteoglycan core protein,
RT assignment of the gene (HSPG2) to lp36.1--p35 and identification of
RT a BamHI restriction fragment length polymorphism."
RL Genomics 11:389-396(1991).
RN [5]
RP SEQUENCE OF 1-21 FROM N.A.
RX MEDLINE-94052171; PubMed-8234307;
RA Cohen I.R., Graessel S., Murdoch A.D., Iozzo R.V.;

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RT "Structural characterization of the complete human perlecan gene and
RT its promoter."
RT Proc. Natl. Acad. Sci. U.S.A. 90:10404-10408(1993).
RL -1- FUNCTION: THIS PROTEIN IS AN INTEGRAL COMPONENT OF BASEMENT
CC MEMBRANES. IT IS RESPONSIBLE FOR THE FIXED NEGATIVE ELECTROSTATIC
CC CHARGE AND IS INVOLVED IN THE CHARGE-SELECTIVE ULTRAFILTRATION
CC PROPERTIES. IT INTERACTS WITH OTHER BASEMENT MEMBRANE COMPONENTS
CC SUCH AS LAMININ AND COLLAGEN TYPE IV AND SERVES AS AN ATTACHMENT
CC SUBSTRATE FOR CELLS.
CC -1- SUBUNIT: PURIFIED PERLECAN HAS A STRONG TENDENCY TO AGGREGATE IN
CC DIMERS OR STELLATE STRUCTURES.
CC -1- TISSUE SPECIFICITY: FOUND IN THE BASEMENT MEMBRANES.
CC -1- PTM: CONTAINS THREE HEPARAN SULFATE CHAINS AS WELL AS N-LINKED
CC AND O-LINKED OLIGOSACCHARIDES.
CC -1- SIMILARITY: CONTAINS 4 LDL-RECEPTOR CLASS A DOMAINS.
CC -1- SIMILARITY: CONTAINS 10.5 LAMININ EGF-LIKE DOMAINS.
CC -1- SIMILARITY: CONTAINS 3 LAMININ DOMAINS IV.
CC -1- SIMILARITY: CONTAINS 22 IMMUNOGLOBULIN-LIKE C2-TYPE DOMAINS.
CC -1- SIMILARITY: CONTAINS 3 LAMININ G-LIKE DOMAINS.
CC -1- SIMILARITY: CONTAINS 4 EGF-LIKE DOMAINS.
CC -----
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CC -----
DR EMBL: X62515; CAA44373.1; -
DR EMBL: M85289; AAA52700.1; -
DR EMBL: M64283; AAA52699.1; -
DR EMBL: S76436; AAB21121.1; -
DR EMBL: L22078; -; NOT_ANNOTATED_CDS.
DR HSP: P00740; IIXA.
DR MIM: 142461; -
DR InterPro: IPR000034; -
DR InterPro: IPR000082; -
DR InterPro: IPR000561; -
DR InterPro: IPR001438; -
DR InterPro: IPR001791; -
DR InterPro: IPR002049; -
DR InterPro: IPR002172; -
DR InterPro: IPR003006; -
DR Pfam: PF00008; EGF; 4.
DR Pfam: PF01390; SEA; 1.
DR Pfam: PF00047; Ig; 22.
DR Pfam: PF00052; laminin_B; 3.
DR Pfam: PF00053; laminin_EGF; 8.
DR Pfam: PF00054; laminin_G; 3.
DR PRINTS: PR00057; 1d1_recept_a; 4.
DR PROSITE: PS00010; EGF_REPEAT; 4.
DR PROSITE: PS00022; EGF_1; 9.
DR PROSITE: PS01186; EGF_2; 5.
DR PROSITE: PS01209; LDLRA_1; 4.
DR PROSITE: PS01248; LAMININ_TYPE_EGF; 11.
DR PROSITE: PS50068; LDLRA_2; 4.
DR Signal: Basement membrane; Proteoglycan; Repeat; Glycoprotein;
KW Heparan sulfate; laminin EGF-like domain; Immunoglobulin domain;
KW Extracellular matrix; EGF-like domain.
FT SIGNAL 1 21
FT CHAIN 22 4393
FT DOMAIN 22 193
FT DOMAIN 194 404
FT DOMAIN 405 506
FT DOMAIN 507 1678
FT DOMAIN 1679 3688
FT DOMAIN 3689 4393

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FT	DOMAIN	197	236	ALPHA CHAINS AND EGF).
FT	DOMAIN	283	321	LDL-RECEPTOR CLASS A 1.
FT	DOMAIN	323	361	LDL-RECEPTOR CLASS A 2.
FT	DOMAIN	405	405	LDL-RECEPTOR CLASS A 3.
FT	DOMAIN	523	532	IG-LIKE C2-TYPE DOMAIN 4.
FT	DOMAIN	533	732	LAMININ EGF-LIKE 1 (N-TERMINAL).
FT	DOMAIN	733	765	LAMININ DOMAIN IV 1 (DOMAIN III A).
FT	DOMAIN	766	815	LAMININ EGF-LIKE 1 (C-TERMINAL).
FT	DOMAIN	816	873	LAMININ EGF-LIKE 2.
FT	DOMAIN	881	925	LAMININ EGF-LIKE 3.
FT	DOMAIN	926	935.	LAMININ EGF-LIKE 4 (INCOMPLETE).
FT	DOMAIN	936	1127	LAMININ EGF-LIKE 5 (N-TERMINAL).
FT	DOMAIN	1128	1160	LAMININ DOMAIN IV 2 (DOMAIN III B).
FT	DOMAIN	1161	1210	LAMININ EGF-LIKE 5 (C-TERMINAL).
FT	DOMAIN	1211	1267	LAMININ EGF-LIKE 6.
FT	DOMAIN	1271	1326	LAMININ EGF-LIKE 7.
FT	DOMAIN	1327	1336	LAMININ EGF-LIKE 8.
FT	DOMAIN	1337	1531	LAMININ EGF-LIKE 9 (N-TERMINAL).
FT	DOMAIN	1532	1564	LAMININ DOMAIN IV 3 (DOMAIN III C).
FT	DOMAIN	1565	1614	LAMININ EGF-LIKE 9 (C-TERMINAL).
FT	DOMAIN	1615	1672	LAMININ EGF-LIKE 10.
FT	DOMAIN	1679	1773	LAMININ EGF-LIKE 11.
FT	DOMAIN	1774	1867	IG-LIKE C2-TYPE DOMAIN 2.
FT	DOMAIN	1868	1957	IG-LIKE C2-TYPE DOMAIN 3.
FT	DOMAIN	1958	2053	IG-LIKE C2-TYPE DOMAIN 4.
FT	DOMAIN	2054	2153	IG-LIKE C2-TYPE DOMAIN 5.
FT	DOMAIN	2154	2242	IG-LIKE C2-TYPE DOMAIN 6.
FT	DOMAIN	2247	2342	IG-LIKE C2-TYPE DOMAIN 7.
FT	DOMAIN	2343	2438	IG-LIKE C2-TYPE DOMAIN 8.
FT	DOMAIN	2439	2535	IG-LIKE C2-TYPE DOMAIN 9.
FT	DOMAIN	2536	2631	IG-LIKE C2-TYPE DOMAIN 10.
FT	DOMAIN	2632	2728	IG-LIKE C2-TYPE DOMAIN 11.
FT	DOMAIN	2729	2828	IG-LIKE C2-TYPE DOMAIN 12.
FT	DOMAIN	2829	2926	IG-LIKE C2-TYPE DOMAIN 13.
FT	DOMAIN	2927	3023	IG-LIKE C2-TYPE DOMAIN 14.
FT	DOMAIN	3024	3114	IG-LIKE C2-TYPE DOMAIN 15.
FT	DOMAIN	3115	3213	IG-LIKE C2-TYPE DOMAIN 16.
FT	DOMAIN	3214	3300	IG-LIKE C2-TYPE DOMAIN 17.
FT	DOMAIN	3301	3401	IG-LIKE C2-TYPE DOMAIN 18.
FT	DOMAIN	3402	3490	IG-LIKE C2-TYPE DOMAIN 19.
FT	DOMAIN	3491	3576	IG-LIKE C2-TYPE DOMAIN 20.
FT	DOMAIN	3577	3671	IG-LIKE C2-TYPE DOMAIN 21.
FT	DOMAIN	3701	3847	IG-LIKE C2-TYPE DOMAIN 22.
FT	DOMAIN	3846	3883	LAMININ G-LIKE 1 (GLOBULAR DOMAIN V A).
FT	DOMAIN	3886	3924	EGF-LIKE 1.
FT	DOMAIN	3924	3924	EGF-LIKE 2.
FT	DOMAIN	3966	4104	LAMININ G-LIKE 2 (GLOBULAR DOMAIN V B).
FT	DOMAIN	4106	4143	EGF-LIKE 3.
FT	DOMAIN	4145	4178	EGF-LIKE 4.
FT	DOMAIN	4243	4391	LAMININ G-LIKE 3 (GLOBULAR DOMAIN V C).
FT	SITE	65	67	HEPARAN SULFATE (POTENTIAL).
FT	SITE	71	73	HEPARAN SULFATE (POTENTIAL).
FT	SITE	76	78	HEPARAN SULFATE (POTENTIAL).
FT	SITE	4151	4153	HEPARAN SULFATE (POTENTIAL).
FT	SITE	4301	4303	MEDIATES MOTOR NEURON ATTACHMENT (POTENTIAL).
FT	DISULFID	199	212	MEDIATES MOTOR NEURON ATTACHMENT (POTENTIAL).
FT	DISULFID	206	225	BY SIMILARITY.
FT	DISULFID	219	234	BY SIMILARITY.
FT	DISULFID	285	297	BY SIMILARITY.
FT	DISULFID	292	310	BY SIMILARITY.
FT	DISULFID	304	319	BY SIMILARITY.
FT	DISULFID	325	337	BY SIMILARITY.
FT	DISULFID	332	350	BY SIMILARITY.
FT	DISULFID	344	359	BY SIMILARITY.
FT	DISULFID	368	381	BY SIMILARITY.
FT	DISULFID	375	394	BY SIMILARITY.
FT	DISULFID	388	403	BY SIMILARITY.
FT	DISULFID	766	775	BY SIMILARITY.
FT	DISULFID	768	782	BY SIMILARITY.

Query Match	24.4%	Score 64.5%	DB 1	Length 4393;
Best Local Similarity	35.5%	Pred. No. 7.4;		
Matches 11; Conservative	4;	Mismatches 15;	Indels 1;	Gaps 1;
QY	2	CGPCSERRHLEVPQTC-KCSCNNDSRC 31		
Db	905	CNECADRSFHLSTRNPDCLKFCGVRHIC 935		
RESULT 15				
ANTA_HYDMA	STANDARD;	PRT: 220 AA.		
ID	ANTA_HYDMA			
AC	P38977;			
DT	01-FEB-1995 (Rel. 31, Last sequence update)			
DT	01-FEB-1995 (Rel. 31, Last annotation update)			
DE	ANTI-STASIN PRECURSOR (ATS) (XA/PROCLOTTING ENZYME INHIBITOR).			
OS	Hydra-magnipapillata (Hydra).			
OC	Eukaryota; Metazoa; Cnidaria; Hydrozoa; Hydroida; Anthomedusae;			
OX	NCBI_TaxID=6085;			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RC	STRAIN=SF1;			
RX	MEDLINE=92387373; PubMed=1516699;			
RA	Holstein T.W., Mala C., Kurz E., Bauer K., Greber M., David C.N.;			
RT	"The primitive metazoan Hydra expresses antistasin, a serine protease			
RT	inhibitor of vertebrate blood coagulation: cDNA cloning, cellular			
RT	localisation and developmental regulation."			
RL	FEBS Lett. 309:288-292(1992).			
CC	-1- INHIBITOR OF FACTOR XA. FACILITATES DIGESTION OF TISSUES			
CC	AND MAY ALSO PROTECT THE GASTRIC TISSUES FROM ITS OWN DIGESTIVE			
CC	ENZYMES. MAY HAVE THERAPEUTIC UTILITY AS AN ANTICOAGULANT. ALSO			
CC	EXHIBITS A STRONG METASTATIC ACTIVITY.			
CC	-1- SUBCELLULAR LOCATION: ENDOPLASMIC RETICULUM.			
CC	-1- TISSUE SPECIFICITY: GLAND CELLS. IT IS MORE STRONGLY EXPRESSED			
CC	IN THE HEAD THAN IN THE GASTRIC TISSUE.			
CC	-1- SIMILARITY: BELONGS TO THE ANTISTASIN FAMILY.			
CC	-----			
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CC	between the Swiss Institute of Bioinformatics and the EMBL Outstation -			
CC	the European Bioinformatics Institute. There are no restrictions on its			
CC	use by non-profit institutions as long as its content is in no way			
CC	modified and this statement is not removed. Usage by and for commercial			
CC	entities requires a license agreement (See <a href="http://www.isb-sib.ch/announce/">http://www.isb-sib.ch/announce/</a>			
CC	or send an email to <a href="mailto:license@isb-sib.ch">license@isb-sib.ch</a> ).			
CC	-----			
DR	EMBL: X67590; CAA47864.1; -			
DR	PIR: S29195; S29195.			
DR	HSSP: P15358; ISKZ.			
KW	Serine protease inhibitor; Repeat: Heparin-binding;			
FT	Blood coagulation; Signal.			
FT	CHAIN	1		POTENTIAL.
FT	CHAIN	20		ANTISTASIN.
FT	DOMAIN	21		6 X APPROXIMATE TANDEM REPEATS.
FT	REPEAT	21		1.
FT	REPEAT	54		2.
FT	REPEAT	91		3.
FT	REPEAT	120		4.
FT	REPEAT	154		5.
FT	REPEAT	183		6.
FT	ACT_SITE	27		REACTIVE BOND (BY SIMILARITY).
FT	ACT_SITE	60		REACTIVE BOND (BY SIMILARITY).
FT	ACT_SITE	98		REACTIVE BOND (BY SIMILARITY).
FT	ACT_SITE	161		REACTIVE BOND (BY SIMILARITY).
SO	SEQUENCE	220 AA;	25016 MM;	E7987FE01900D0278 CRC64;
Query Match	22.3%	Score 59;	DB 1;	Length 220;
Best Local Similarity	32.1%	Pred. No. 2.5;		
Matches 17; Conservative	8;	Mismatches 12;	Indels 16;	Gaps 4;

QY 5 CSEBKKHLYQDPQTC-KCSCANTDSCKAROL-----ELNE---RTCRC 45  
Dp 97 CKMHCEGFFVBDENGCPKCEC-----SKCKOFOCLIFCPHNGNEVDENGCKTKC 145

Search completed: September 24, 2001, 16:16:17  
Job time: 193 sec

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